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START-UP SHAKE-UP
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3Com raises the ATM switch ante

CoreBuilder 9000 boasts 70G bit/sec capacity to rival Cisco and FORE gear.

By Jim Duffy
Boxborough, Mass.

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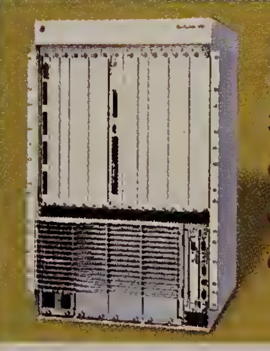
But 3Com still faces an uphill battle in the enterprise network arena. According to The Dell'Oro Group and a separate study by In-Stat, FORE has a substantial market lead in ATM LAN switch

See 3Com, *page 57*



BUILDING A BETTER BOX

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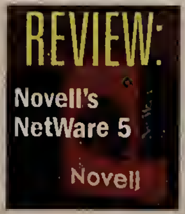
Novell delivers



Lab test shows new features and bundled extras make NetWare 5 a compelling upgrade.

By James E. Gaskin, Network World Test Alliance

NetWare 5 ships next week, just in time to meet Novell's self-imposed end-of-summer deadline. We got our hands on the package early and found its new features — pure IP support, robust memory management, enhanced directory services and an eye-catching graphical administration interface — make it a World Class product.

NetworkWorld World Class

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Servers and clients can run both protocols, and a migration agent eases the transition if plans call for converting the network to IP in stages. Novell also includes features that make IP more usable, such as Domain Name System and Dynamic Host Configuration Protocol tools that load automatically and are controlled through NWAdmin, Novell's NDS administrative interface.

See Lab test, *page 14*

Users press Cisco to give NDS a chance

By Christine Burns

A growing number of Cisco customers are demanding the company give Novell Directory Services (NDS) equal play in the emerging high-stakes game of directory-enabled network management.

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Cisco's applications, for

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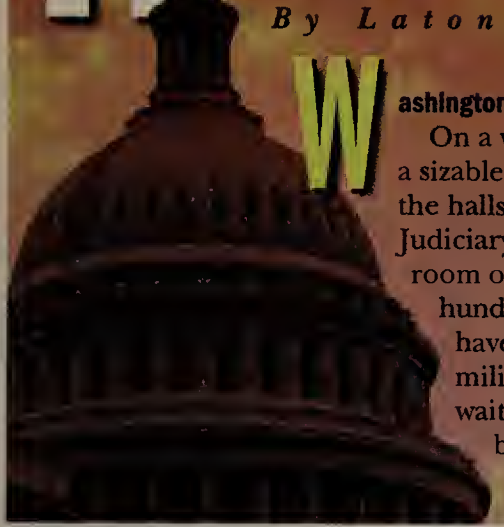
Page 8.

IT heads to the Hill

By Laton McCartney



Washington, D.C.

On a warm summer day here, a sizable crowd has gathered in the halls outside the House Judiciary Committee hearing room on Capitol Hill. Several hundred Vietnam War veterans have come to campaign for military benefits and are waiting their turn to go before the committee.

See **IT heads,** *page 37*

Compaq adds muscle to Microsoft Exchange

By Paul McNamara
Boston

Enterprise customers who have embraced Microsoft Exchange primarily for e-mail features now have a new tool to fill the messaging platform's groupware gaps.

Compaq this week will throw a coming-out party for its Work Expeditor product at the Microsoft Exchange Conference here. The new client/server software provides advanced workflow, document management and collaboration capabilities not currently available in Exchange and its Outlook client.

Work Expeditor was developed by Digital, the leading Exchange reseller and systems integrator prior to being acquired by Compaq earlier this year. But Digital never shipped the software, which Compaq says is now being piloted by 20 Exchange customers — none of which Compaq would identify last week.

Exchange customers and industry experts who are familiar with Work Expeditor believe the combination of its

See **Compaq,** *page 57*

Get more online:

- A look at how the Web is reviving workflow.
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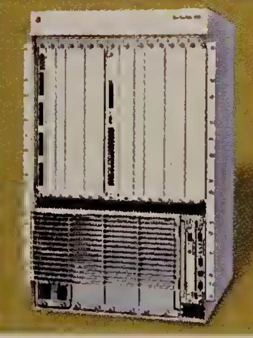

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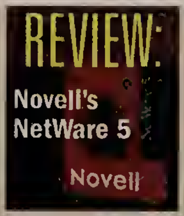

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STEVE ZAVODNY

STAR PLAYER

IT manager Rick Schoenhals is a key member of the Denver Broncos and has the Super Bowl ring to prove it. Page 41.

IN SYNC WITH NT

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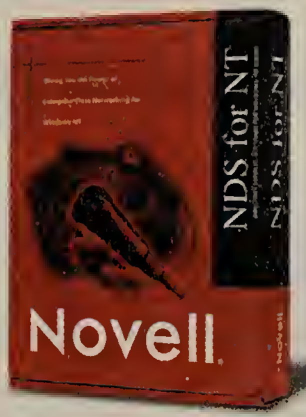

THE NEW NORTEL

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JASON GROW

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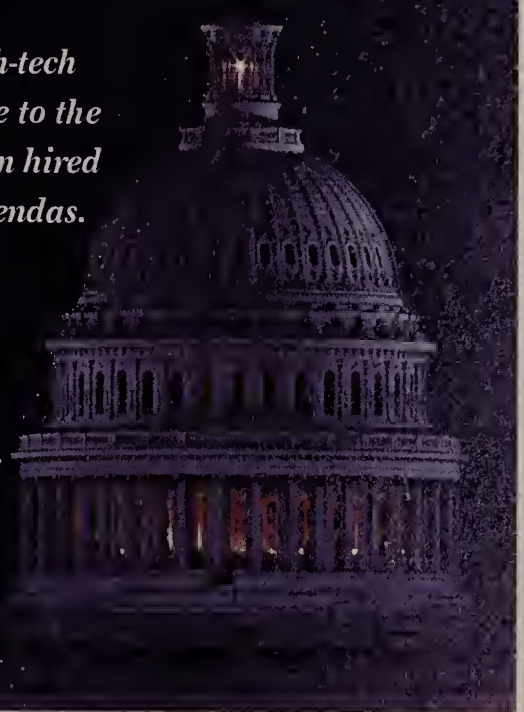

IT HEADS TO THE HILL: *High-tech firms are finally becoming wise to the ways of Washington, bringing in hired guns to push their political agendas.* **Page 1.**

Network World World Class

REVIEW: *New features and bundled extras make NetWare 5 a compelling upgrade.* **Page 1.**

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This Week

Only on Fusion

Water Cooler. Do we get too heady on hype fumes? *Network World* Editor John Dix talks to a manager at a shop that still has 13,000 users running Windows 3.11 on 486s. **DocFinder: 8743**

Telecommuting. See what people said about cable modems vs. DSL. Add your thoughts on which is best. **DocFinder: 8637**

NetWare 5. Read our review, then come online for a series of NetWare forums. **DocFinder: 8738**

Buyer's Guides. For the past month, we've only put product specs from our Buyer's Guides online. We think this gives us more room in print to discuss the products – and gives you a better tool for finding the info you need. What do you think? **DocFinder: 8745**

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News briefs, September 7, 1998

So much for the brand name

Web services start-up USWeb Corp. of Santa Clara, Calif. has had its share of critics who say the company's aggressive acquisition strategy has led to heavy debt with little revenue to show for it. In response, company officials have argued that USWeb's acquisition strategy will pay off in the long run as the company carefully builds its name brand. Apparently, that plan has changed because the company last week announced a merger with rival services vendor CKS Group, based in nearby Cupertino, Calif. The $350 million deal will result in a new company called Reinvent Communications, Inc. Says one early and important USWeb investor who asked to remain anonymous, "Why they changed their name, I have no idea." But some observers say the merger, expected to be completed this year, was necessary for the companies to compete in a market that includes giants such as Andersen Consulting, Cambridge Technology Partners and IBM.

Lighting up the Big Pond

In a move that will likely scare a lot of fish, 50 telcos last week agreed to invest $1.5 billion to thread a new high-speed, fiber-optic submarine cable between the U.S. and the U.K., France, Germany, the Netherlands and Denmark. Investors include AT&T, Sprint, British Telecommunications, Cable & Wireless, Deutsche Telekom and France Telecom SA. The group's TAT-14 cable network, which will span 9,315 miles and support 640G bit/sec throughput — the equivalent of seven million simultaneous phone calls — is designed to help the carriers keep up with the ever-growing amount of traffic between the U.S. and Europe. The increase has partly occurred as a result of the growth in Internet usage and the transmission of multimedia applications, telco executives say. The new cable network is slated to be up and running in two years.

Free from firewalls, help desks and SNMP

The future is a world in which help desks, firewalls, SNMP and software distribution applications all vanish — or at least fade into the background. That was the message coming out of *Network World's* Managing Enterprise Networks & Systems conference in Boston last week. Jim Herman, vice president at Northeast Consulting Resources, says firewalls will become increasingly difficult to administer as they become complex, and businesses will need to push aside firewalls to open their companies to other businesses. Software distribution applications will become unnecessary in a world of Web-based plug-ins; SNMP will give way to the Common Information Model; and help desks will yield to mechanisms that show users how to solve their own problems, he says.

The check's not in the mail

You're out of luck if you are among the Internet address holders looking to cash in on an April district court ruling that said domain name fees constituted a tax. Judge Thomas Hogan last week reversed his own decision that called the registry fees collected by Network Solutions, Inc. (NSI) an "illegal tax." Hogan, in his earlier ruling, had left room for Congress to retroactively ratify legislation to include the collection of funds by NSI under its contract with the National Science Foundation (NSF), and Congress did just that. NSI collected $100 per application from registrants; $70 went toward system upkeep, and $30 went to the NSF fund. The fund, as of April, totaled more than $46 million. Imagine trying to divvy up the money among the more two million corporations and individuals who registered their domains with NSI. Instead, the money will go toward Internet research and the development of the new domain name infrastructure, government officials say.

Cabletron adds smarts to switches

New software revision lets users build bigger switch domains.

By Jim Duffy
Rochester, N.H.

Cabletron next month will ship a version of its switch software that lets users build large network domains and suppress certain types of traffic.

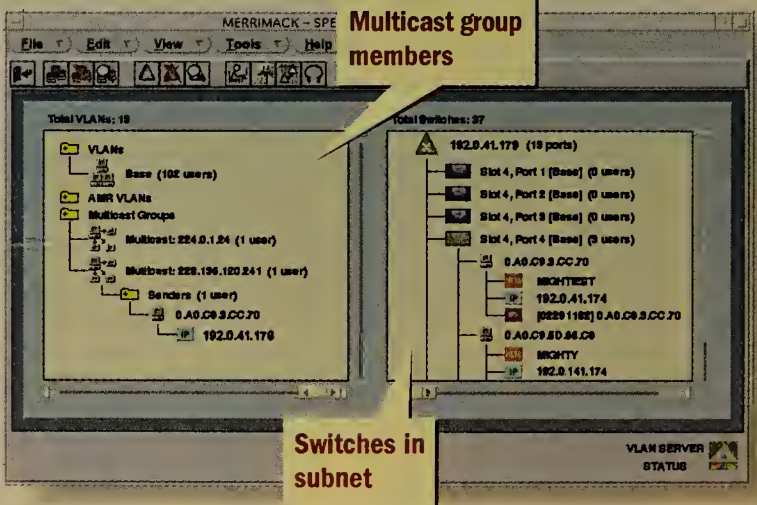
The software, called Smart Network Services 1.8, is a new version of Cabletron's SecureFast Virtual Network Services software. Cabletron changed the name of the software to better identify it with the company's SmartSwitch devices.

Smart Network Services 1.8, which comes with Cabletron's VLAN Manager application, has a number of enhancements over SecureFast 1.7, including support for SecureFast domains consisting of more switches. Domains refer to groups of switches under a common administrative authority.

The software also includes a feature called Virtual Link State Protocol (VLSP), which is an Open Shortest Path First-like topology protocol for Layer 2-switched networks that allows users to build domains with more than 128 switches.

MAKING SWITCHES SMARTER

Cabletron's Smart Network Services 1.8 software shows which multicast groups belong to which VLANs as well as the number of switches in a subnet.



Domains were limited to 120 to 130 switches under SecureFast 1.7, and it took switches in such large domains a long time to set up new routes to get around failed links, according to James Wiedel, director of networking at the University of Southern California in Los Angeles.

"We made good use of VLSP because we have 190 switches out there now," says Wiedel, who's been beta-testing Smart Network Services 1.8.

Administrators can also use the new software to define link access policies for suppressing more types of protocol traffic from gaining VLAN membership and overloading networks. Version 1.7 already supported suppression of IP, IPX, NetBEUI and NetBIOS traffic; Version 1.8 adds DECnet, AppleTalk and Banyan VINES traffic suppression to the mix.

"We suppress a lot of protocols like NetBEUI," Wiedel says. "We strongly discourage people from running those because they cause mucho problems."

Another added feature of Cabletron's software is its ability to identify IP Multicast senders and receivers. This feature lets users autodiscover multicast channels and find out who's speaking on the channels. Version 1.7 recognized multicast receivers only.

Smart Network Services 1.8 also boasts the ability to associate virtual LANs with Dynamic Host Configuration Protocol (DHCP) addresses.

The software's DHCP relay agent allows users to define a scope of addresses per switch and associate VLANs to the scope. This ability enables administrators to point new users entering the network to a certain VLAN/subnet association.

> *"We suppress a lot of protocols like NetBEUI. We strongly discourage people from running those because they cause mucho problems."*
>
> **James Wiedel,** *director of networking, University of Southern California*

Lastly, Smart Network Services 1.8 features tighter integration with Cabletron's Spectrum 5.0 management platform. This integration includes the ability to set threshold alarms and events, view performance reports and launch element management tools from Spectrum switch icons.

"The big thing is the ability to go to Spectrum 5.0 and integrate the VLAN Manager in Spectrum tools," says Erne Hayden, IS manager for Southwestern Bell Wireless in Dallas.

Cabletron's VLAN Manager software, including Smart Network Services 1.8, costs $4,995.

✆ Cabletron: (603) 332-9400

CORRECTIONS

A recent article on Zero-Knowledge Systems (Aug. 10, page 1) incorrectly reported the price of the company's new IP anonymity software. The company will make available a freeware version as well as a Pro edition that will cost $50, plus a $5 annual fee per pseudonym. The article also incorrectly referred to Zero-Knowledge Systems' software as using a technology called onion routing, which was developed by the Naval Research Laboratory. For more information, visit www.zks.net.

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Silicon Valley's wake-up call

For start-ups, the days of easy money may be over.

By Chris Nerney

For at least two years, industry observers warned that an excessive number of high-tech companies, particularly Internet start-ups, were flourishing in a fool's paradise of overvaluation and easy venture capital.

Now it appears Silicon Valley may have a new permanent resident: Reality.

The wild gyrations on Wall Street over the past six weeks have brought many high-flying stocks closer to earth. Amazon.com was at $140 per share in July; now it's valued at less than $90. RealNetworks is down from $45 per share to $20. Yahoo's shares fell from $98 to less than $80.

"This is not a fluke. There's something real going on here," says Ken Mabbs, director of corporate finance at First Albany in Boston.

The stock market's woes will affect more than those young companies that have already gone public. Venture capitalists are likely to become more discriminating about which new companies they back.

For network managers and other IT professionals, that could be good news. "This will separate the wheat from the chaff," says Todd Dagres, a partner with Battery Ventures, a venture capital firm in Wellesley, Mass. "Marginal companies won't get funded."

So rather than trying to choose between a dozen different e-mail vendors, network buyers instead may have five or six companies vying for their business. "For customers, there'll be less choice, but an awful lot of the choice today is noise," Mabbs says. "The venture capitalists are going to be more selective, and they will throw more money at the good companies."

Customers also will be more selective, says Tom Pincince, vice president of business development at Bay Networks.

"People are going to spend more time buying stuff," says Pincince, whose own start-up, extranet router vendor New Oak Communications of

See **Stocks**, *page 10*

HOLDING STEADY, FALLING FAST

While some network and Internet stocks have weathered the fluctuations in the stock market that began in mid-July, others have not fared as well.

	Stock price		
Company	**July 15**	**Aug. 17**	**Sept. 3**
Amazon.com	$112	$122	$87
Ciena	$77	$56	$28
Cisco Systems	$95	$98	$91
Microsoft	$117	$107	$101
IBM	$117	$125	$120
RealNetworks	$39	$31	$19

Bay deal done, new divisions named

By Jim Duffy and
Denise Pappalardo
Brampton, Ontario

With its acquisition of Bay Networks now complete, Nortel will attempt to cover the IP convergence map with five divisions.

"We're now in business as the new Nortel," says John Roth, CEO and vice chairman of Nortel. "We now have 15,000 employees with market-hardened technology in the field of routing and IP networking."

The company, however, is still sifting through its various product lines to determine which to carry forward and which to leave behind. Overlap has already been spotted in voice-over-IP offerings.

As for the new divisions, Nortel's Enterprise Data Networks line of business is being merged into the operations of Bay. This unit, called Bay Networks, will be headquartered in Santa Clara, Calif. Dave House, chairman, president and CEO of Bay, will head the organization in addition to his responsibilities as president of Nortel.

For the carrier data segment, Nortel is establishing a new line of business called Carrier Packet Networks. This unit will be based at Bay's former Billerica, Mass., facilities and will provide carriers with Nortel's optical fiber transmission systems, high-end routing and switching platforms, frame relay and ATM switches, and dense wave division multiplexing gear.

Some data-network products and technologies from Bay, Aptis Communications and Avici Systems are also being integrated into this business unit.

For the carrier telephony segment, a realigned Carrier Networks business unit has been formed to deliver Nortel's DMS line of digital switching systems and other carrier telephony gear.

PHOTO (RIGHT) JASON GROW

Nortel CEO *Roth (left) and Bay Networks' House may out their plans to deliver IP convergence.*

Ian Craig, formerly president of Broadband Networks, is president of this organization. Craig's responsibilities also include manufacturing operations for Carrier Networks and Carrier Packet Networks.

Nortel's wireless carrier and enterprise voice customer segments in Richardson, Texas, have not changed.

Nortel has appointed Bill Conner, previously president of Nortel's Enterprise Data Networks line of business, to the newly created position of executive vice president of marketing. Conner is responsible for Nortel's global marketing, communications and branding initiatives.

As Nortel realigns to integrate Bay, it is also combing through Bay's product portfolio to determine what will make the cut. Already, Bay's Voice Gateway 4000 voice-over-IP device, which was a joint development project with NetSpeak, has come to a screeching halt.

Late last month Natural Microsystems was informed it would no longer be needed to supply Bay or NetSpeak with its Fusion voice-over-IP chipset.

Bay's plan to use NetSpeak's voice-over-IP cards in its routers has also been changed, says Al Delorenzi, vice president of Bay Networks business development. Instead of using another vendor's products, Bay will integrate Nortel's Micom voice-over-IP technology into its routers.

"Bay made an equity investment in NetSpeak and that's not going to change," Delorenzi says of Bay's $37 million stake in the company. But Nortel is still working on how or if NetSpeak fits into its game plan, he says. ■

56K modems now a safe bet

Interoperability concerns soon will be solved.

By Tim Greene

User fears about the interoperability of 56K bit/sec modem compatibility should be put to rest by the end of the month.

The International Telecommunication Union (ITU) is scheduled to give final approval to the V.90 standard for the fast modems during its meeting in Geneva beginning Sept. 14.

But as the ITU prepares to meet about the standard, the U.S. Patent and Trademark Office last week issued a patent on 56K bit/sec modems to California inventor Brent Townshend. His claim on the basic idea for 56K bit/sec modems sent the modem industry into a tailspin last year.

Modem makers feared that if his challenge was legitimate, the price he would charge to license his idea might upset their budgets. Ultimately, Townshend agreed to be fair and reasonable in his fee. Townshend says he will receive $1.25 per remote modem and $2.50 per server modem port from vendors.

It is still unclear whether the fees will affect modem prices. So far, no vendor other than 3Com has paid Townshend for his idea, he says.

Lucent Technologies, which makes 56K bit/sec modem chips, says it has not read the patent. Cisco says it typically builds the cost of licensing patents into its cost structure for products.

3Com says modem makers might challenge his patent in court, further delaying payment for his idea.

Meanwhile, Townshend is on to other things. He says he has applied for patents on a way to block unsolicited e-mail.

Townshend aside, once the ITU settles on the standard proposal, corporate users who have been putting off modem upgrades say they will go ahead with those improvements.

"We kind of rode the wave. We wanted the V.90 modems to be stable," says Dean Heltemes, remote access service manager for Cargill in Minneapolis.

The company, a distributor of agricultural products, felt comfortable enough with the pending V.90 standard to upgrade the modems in its Ascend Communications MAX remote access concentrator. Once the standard is official, the company will tackle the more time-consuming task of upgrading its remote-user modems to V.90.

Some remote users bought prestandard 56K bit/sec modems that do not work at full speed when communicating with the MAX units, Heltemes says. Without the upgrade, the fastest link the modems can establish is 33.6K bit/sec. ■

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Customers seeing thin clients pay off

Thinergy '98 conference celebrates early success stories, including FedEx and R.R. Donnelley.

By **John Cox**
Orlando

Companies deploying Windows thin-client software say they're starting to see benefits, but, surprisingly, a lower total cost of computing hasn't been the biggest payoff to date.

More impressive, users say, has been the ability to customize and manage corporate desktops more easily and deploy critical applications more quickly.

At the Thinergy '98 thin-client conference here last week, several MIS managers described broad deployments of multiuser versions of Windows NT. The managers are using Microsoft's NT Server 4.0 Terminal Server Edition (TSE) or its predecessor, WinFrame, which was developed on NT 3.51 by Microsoft partner Citrix Systems.

In some cases, these sites are also putting Windows-based terminals on corporate desktops, replacing either mainframe terminals or older PCs. In other cases, the companies are simply adding Citrix code to existing PCs, enabling the machines to access TSE servers.

"This thin-client approach is really server-based computing," said Rob Carter, chief technology officer for FDX Corp., the Memphis, Tenn., parent company of Federal Express. "This approach transcends the particular client implementation. It lets you have a very heterogeneous client base."

Federal Express has begun replacing more than 60,000 mainframe terminals with Wyse Technology Windows-based terminals that have access to TSE servers.

But the package delivery company will also have PCs, Unix workstations and, further down the road, handheld devices that will be able to access applications hosted on TSE machines.

Despite vendor claims that thin clients can reduce total computing costs compared with PCs, the Thinergy speakers had little hard data on this issue. Their decision to adopt thin clients was based on other criteria, although they said that by shifting application processing entirely to the server, they are cutting PC maintenance and support costs.

Federal Express' goal is to create easily managed personal desktops. Because all user accounts, data and applications are on TSE servers, employees can use any type of device outfitted with the appropriate client software to reach this information, Carter said. Instructions are the only data moving over the network to the client device. The instructions detail how to display changes to the application screens.

JEFF BLANTON

FedEx's Rob Carter *says thin clients*

Chicago printing company R.R. Donnelley & Sons, another company represented at the conference, has used Citrix WinFrame to deploy PeopleSoft financial applications for 2,500 end users at 52 U.S. sites.

Choosing WinFrame cut the estimated total project cost to $48 million, according to Fred DiDominick, Donnelley's IT manager. The company would have spent $60 million if it had gone with a traditional PC-based client/server model, he said.

"To use the traditional client/server approach, we'd have to replace 50% to 80% of all our PCs, add new file servers on the LANs and make big upgrades to our WAN," DiDominick said.

Keeping all application and database processing on the servers has also rewarded thin-client users with much faster response time over the WAN, he said.

Users, though, said all is not perfect with thin clients. For example, they said a lack of a strong enterprise directory service for thin-client environments is an obstacle for managing desktops across the network.

However, Citrix last week revealed that it has teamed with Novell to enable Novell Directory Services and Novell's related ZENworks desktop management product to be used in TSE and WinFrame shops. ■

Stocks

Continued from page 8

Acton, Mass., was bought early this year by Bay.

But the start-ups that could be most adversely affected by stingier public and private investors may be those already headed down the runway.

"Companies hoping to go public right now won't be able to and could run out of money," Dagres says. "They'll have to go back to the venture capitalists, who will squeeze them on valuation."

Perhaps even worse for existing start-ups is the adverse effect tighter money and lower valuations will have on their ability to keep talent.

"A lot of venture capital-backed companies are heavily oriented toward employee stock options, which have been up," Mabbs says. "With this correction, a lot of people who thought they had $500,000 in their nest egg have been wiped out. So they'll go someplace else."

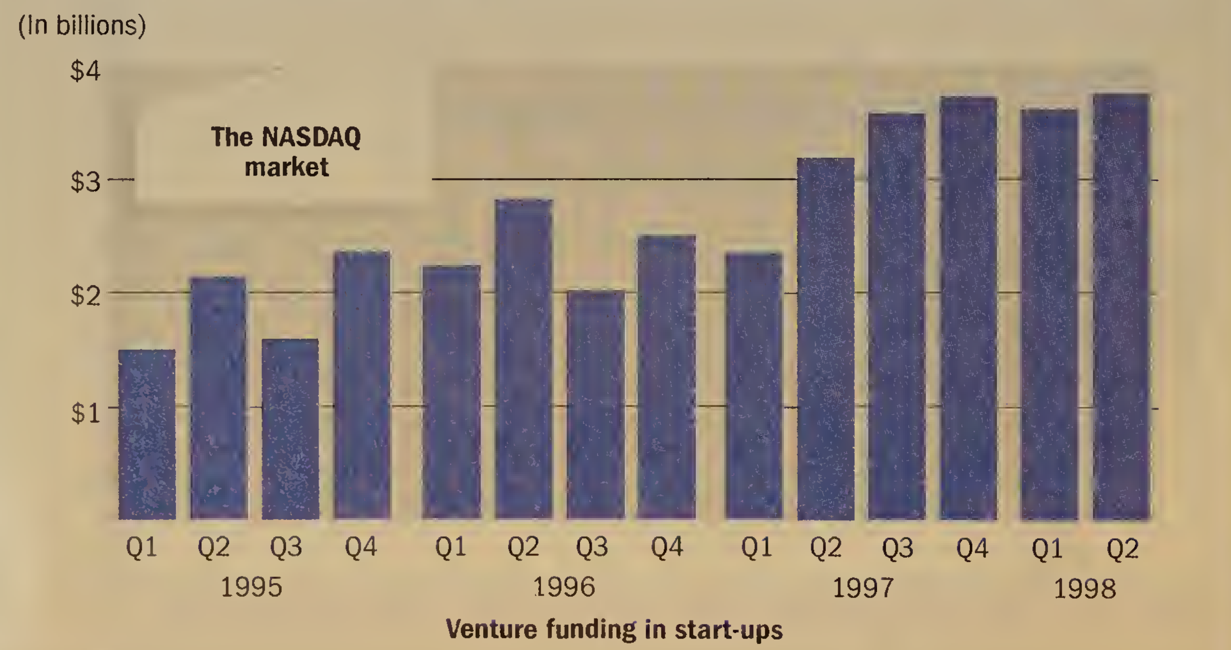
However, stock market instability is more than a start-up killer. Some larger companies in the midst of mergers or acquisitions may have to revise their plans should the Wall Street slide continue to affect capitalizations.

"Significant market moves can threaten deals," says Greg Rossmann, a principal at Broadview Associates, a Foster City, Calif.-based company that negotiates mergers and acquisitions for large corporations.

To take into account possibly dramatic stock price fluctuations, Rossmann says, merger contracts often include provisions that safeguard against valuation instability. ■

VENTURING AHEAD

In the past three years, the rate at which venture funds poured into start-ups roughly mirrored the rise in stock prices. But will venture funding continue at its record pace if the market continues to drop?



SOURCE: NASDAQ; PRICEWATERHOUSECOOPERS, SAN JOSE, CALIF.

Citrix preps thin-client products

At the Thinergy '98 conference last week, Citrix Systems showcased two thin-client products still in development.

A new offering, Ascot, will let NT managers fine-tune how end users work with specific applications as well as improve application monitoring capabilities. Using Ascot, managers can change what users see when they log on to an application on a machine running Microsoft's multiuser Windows NT Server 4.0 Terminal Server Edition (TSE). The tool will enable managers to simply create a rule and apply it to individual users or groups of users.

Also in development is software code-named Gemini, which is designed to make it easier to distribute and install application software on large server clusters running TSE or its predecessor, WinFrame. Based on code licensed from Epicon, Gemini watches how an application is installed, creating a script of where executable, dynamic link library and other files are installed. Gemini uses the script to apply the process when installing the application on other servers.

Both products will begin beta tests later this year.

—John Cox

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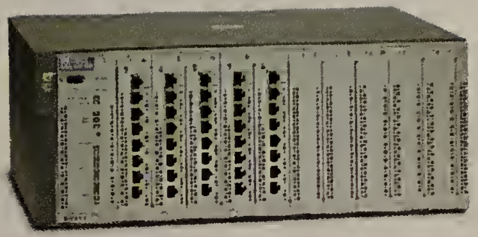

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NetWare 5 shines in lab test

Continued from page 1

Other additions include the Service Locator Protocol, which replaces most of IPX's chatty service advertisement broadcasts, and NetWare Storage Services. Large network volumes used to be slow to mount and prepare during server boot, especially after a problem. With NetWare Storage Services, volumes with millions of files stretching over hundreds of gigabytes of disks mount in just a few seconds.

Net Results

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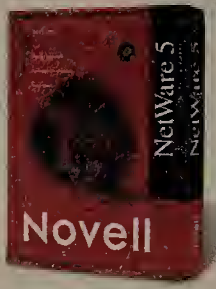

PROS

▲ Better administrator tools.
▲ Easier client connections and logon.
▲ New file system mounts huge volumes almost instantly.
▲ Complete transition to pure IP network transport works seamlessly.

CONS

▼ ConsoleOne just barely hatched; slow and limited in functions.
▼ Server management still requires a mix of applications.
▼ Minimum server RAM now up to 64M bytes.

That change in mount speed is the result of a new journaling system that creates a collection of pointers to directories and files, obviating the need to read the disk at boot-up time and improving crash protection.

The memory management system in NetWare 5 represents a departure from Novell's NetWare 4 approach. For the first time, NetWare uses a virtual memory scheme to stretch available RAM application space to the server hard disk.

Though this setup could potentially slow down applications, we found performance comparable to or slightly better than NetWare 4 for quick casual tests. This is thanks, no doubt, to the judicious use of RAM caching and server memory management.

NetWare 5 includes support for as many as four server CPUs for no extra charge. Although we were unable to test multiprocessor performance in time for this review, that should give you extra horsepower for server-based applications.

NDS extras

Enhancements to Novell Directory Services (NDS) include more granular control. For example, you can create an address administrator that can change and update mailing and e-mail addresses for every user on the network without seeing their files or other information.

Installation is faster than ever, although any speed gained through automation is offset by the busy graphical interface. Throughout the complete installation process, there unfortunately is no option to use the old C-Worthy interface. To save CPU overhead, you can turn off the graphical interface on running servers.

NetWare 5 eliminates the need to scramble for a DOS boot disk and CD-ROM drivers for server installation if your server supports the El Torito bootable CD-ROM standard. The license disk is now bootable and includes just enough of Caldera's DR-DOS to get rolling.

Another critical component of NetWare 5 is the easy upgrade to Client32 software for Windows 95, 98 and NT users. Simply copy some files to a network directory and add a single command to appropriate logon scripts, and every user's files will be brought up to date.

NetWare 5 includes a ZENworks starter pack, which offers automated software distribution but lacks the full product's hardware inventory and NDS-based remote-control features.

The one nit we found on the server side is the new ConsoleOne management interface.

Sure, it's pretty, and it's written in 100% Java. But it's slow, even when running on a workstation, and it's immature compared with the long-time administration utility, NetWare Administrator, which is still available.

From the client's seat

End users will also find some things to cheer about in NetWare 5.

NetWare 4 required a complete logon name to identify users in large networks. NetWare 5's context-less logon allows users to key in a first name and select from a list of matches.

The new default logon screen shows fewer details, but one click reveals all the NDS information a user needs. Browser buttons call up trees and contexts, so a client never has to type an entry from memory.

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The NT Client32 software ties the NT and NetWare passwords together, giving users a single logon.

Client32 now adds a bright red N to the system tray on the taskbar. By right-clicking on this, you get a menu of network capabilities. From here you can see network status, map a network drive, capture a printer port and even send instant messages.

All these features were available before NetWare 5, but they were scattered throughout Network Neighborhood, Control Panel and Explorer.

Looking forward

While NetWare 4 was a big leap thanks to the appearance of NDS, NetWare 5 delivers more fundamental changes to the operating system than any previous upgrade.

Users won't see the new network protocol, memory management improvements, upgraded file system and graphical administration interface, but managers will rejoice at Novell's continued improvement of a rock-solid network operating system.

Gaskin writes books, articles, columns and jokes about technology and real life. He can be reached at james@gaskin.com. Gaskin is also a member of the Network World Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

Score Card

NetworkWorld World Class	Directory services (20%)	Management / administration (20%)	Performance (10%)	Networking/ connectivity (10%)	Security (10%)	Enterprise scalability (10%)	Stability (10%)	Flexibility/ ease of use (5%)	Installation/ documentation (5%)	Total score
NetWare 5	10 x .20 = 2.00	9 x .20 = 1.80	10 x .10 = 1.0	10 x .10 = 1.0	10 x .10 = 1.0	10 x .10 = 1.0	10 x .10 = 1.0	9 x .05 = .45	8 x .05 = .40	9.65

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

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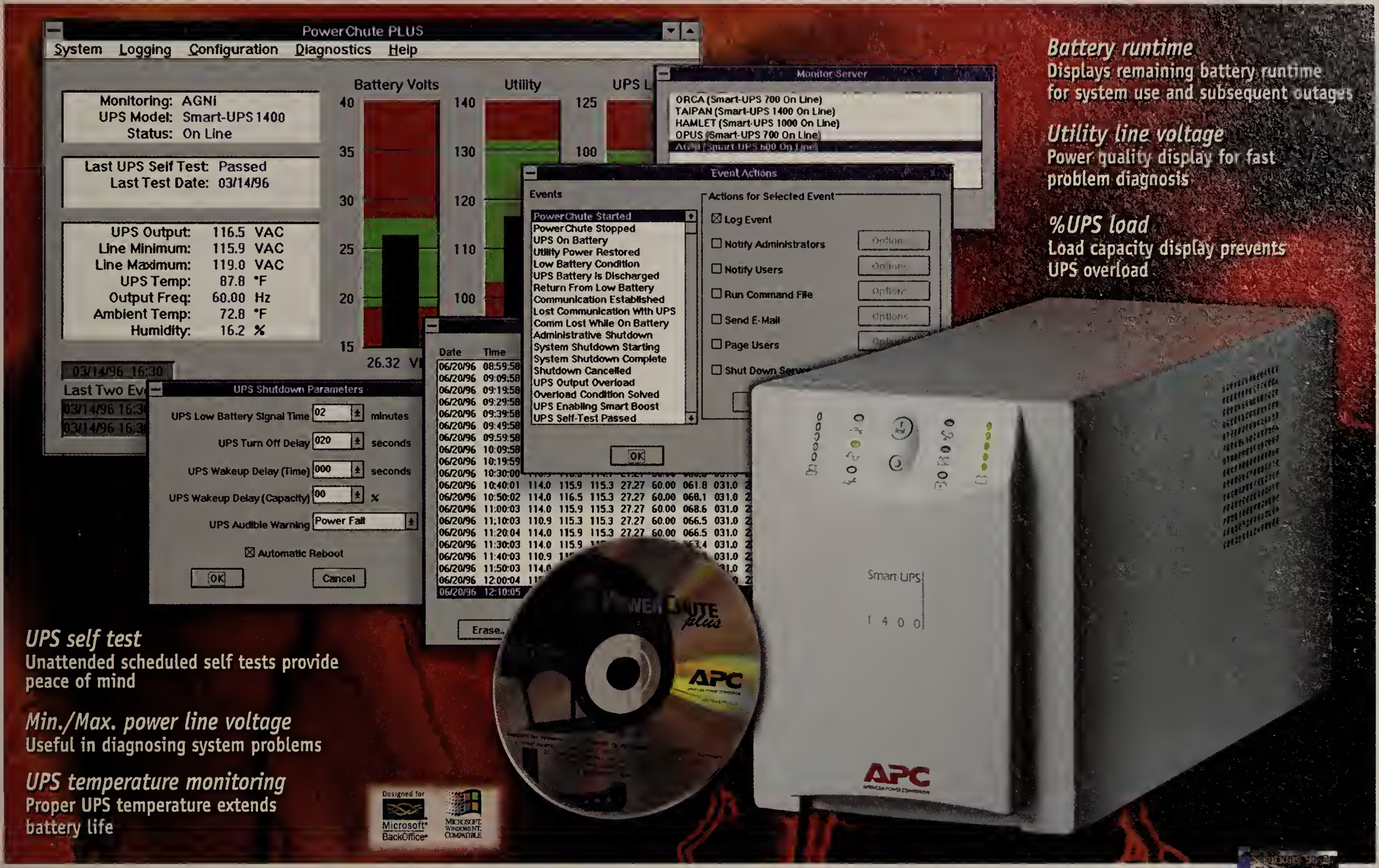

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Ambient Temp: 72.8 °F
Humidity: 16.2 %

03/14/96 16:30
Last Two Ev
03/14/96 16:3
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Utility Power Restored
Low Battery Condition
UPS Battery Is Discharged
Return From Low Battery
Communication Established
Lost Communication With UPS
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System Shutdown Starting
System Shutdown Complete
Shutdown Cancelled
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Overload Condition Solved
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UPS Wakeup Delay (Capacity) 00 %
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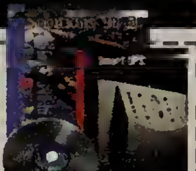

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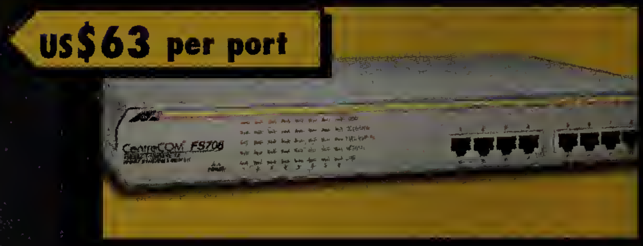

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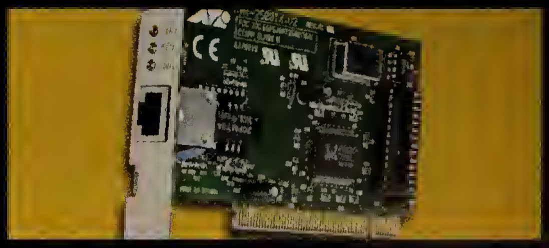

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Briefs

■ **Hewlett-Packard** *last week bolstered its* **low-cost Ethernet and Fast Ethernet** *product lines by introducing a pair of switches and four new hubs.*

The ProCurve Switch 212M and 224M are 12- and 24-port 10Base-T devices, respectively. The switches feature a 10/100M bit/sec autosensing uplink port as well as a transceiver slot that can be filled with a 100M bit/sec untwisted pair or fiber connection card.

HP's *24-port ProCurve Switch 224M*

The 212M costs $829, or $64 per port, and the 224M costs $1,379, or $55 per port.

HP's new hubs include the ProCurve 10/100 Hub-12 and Hub-24, which are 10/100M bit/sec autosensing devices that enable customers to migrate from Ethernet to Fast Ethernet.

The 12-port Hub-12 costs $649, or $54 per port. The 24-port Hub-24 costs $999, or $42 per port. The company also unveiled a pair of eight-port devices, the ProCurve 100Base-T Hub-8 and ProCurve 10Base-T Hub-8. The Fast Ethernet version costs $229, or $30 per port, while the Ethernet edition costs $79, or $10 per port.

✆ HP: (650) 857-1501

■ **Intel** *last week* **slashed prices by up to 33%** *across its Express Hub line of stand-alone and stackable 10/100M bit/sec hubs.*

The company cut the price of its 12-port 220T Stackable Hub by 14% to $1,099 and the price of its 24-port 220T by 17% to $1,499.

Intel saved its biggest price cut for the eight-port Express Standalone Hub, which now costs $399, down 33% from its previous price of $595.

✆ Intel: (800) 538-3373

In-Site

Old network technologies prove to be shipshape

By Jim Duffy
Massena, N.Y.

With all the hype surrounding ATM, Gigabit Ethernet and other high-speed LAN technologies, it's refreshing to know that a simple NetWare 3.X network on shared Ethernet can still support a mission-critical application.

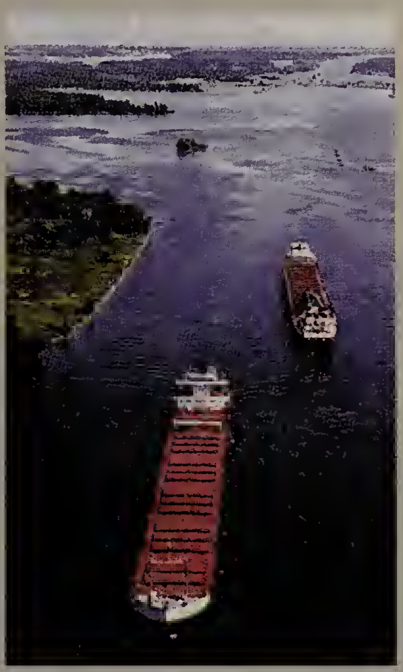
Those are the key technologies the St. Lawrence Seaway Development Corp. (SLSDC) is using to track North American and international vessels passing through the St. Lawrence Seaway, a vital link between the Atlantic Ocean and the Great Lakes.

SLSDC, an arm of the U.S. Department of Transportation (DOT), has had this network for eight years and could have it for eight more, given the net's reliability and carefree administration.

"If it's not broke, don't fix it," says Chris Phillips, SLSDC's management information system programmer. "It's been a pretty secure system. . . . Any problems that we come across are little, and the utilities right in Novell NetWare take care of it."

SLSDC did lose two servers — one in traffic control and another in maintenance — during the ice storm that hit northern New York, New England and southeastern Canada early this year. But the server losses were during downtime in the shipping season, which runs from late March to late December.

It's a good thing, too. "Those are the two most important servers we've got," Phillips says.



NetWare and Ethernet *are helping to keep St. Lawrence Seaway traffic running smoothly.*

The network connects 90 DOS and Windows NT workstations and five NetWare 3.12 servers on 10Base-T Ethernet LANs in three buildings here and at the DOT in Washington, D.C. NetWare handles all file and print services for the buildings, which house administration, traffic control and maintenance operations for the Seaway.

"The file servers are just storing and sharing files," Phillips says.

The workstations and servers are connected to the LAN via David Systems ExpressNet hubs, and the LANs are internetworked over T-1 lines using Microcom MBR-EN100 Ethernet bridges. SLSDC uses Lotus' cc:Mail for electronic messaging.

To track ships, mariners aboard vessels call in to traffic

See **Seaway,** *page 18*

Start-up thinks thin about Web servers

Technauts introduces integrated hardware and software package.

By Marc Songini
Research Triangle Park, N.C.

You might call what start-up Technauts, Inc. is selling "Web server lite."

The 18-employee company, founded by two Cisco alumni, has just released its first offering, dubbed the e-Server 150.

This thin server, which is about the size of a telephone book, is an integrated hardware and software package. The server is powered by a 100-MHz Pentium Pro processor and comes bundled with a version of the Linux operating system as well as standards-based e-mail and Web server software.

The product gives customers an alternative to cobbling together a Web and e-mail server by separately purchasing a PC server, Web server software, a network operating system and an e-mail package.

The e-Server 150 will be part of a line of such boxes the company has planned for small and mid-size businesses as well as Web-connected remote offices at larger enterprises.

"We developed this as something very simple and easy to use for small to medium businesses or offices," says Ravi Periasamy, Technauts' president. "For the big corporate IS manager, this can be an easy way to deliver a lot of Web server functions without a lot of technical support."

Technauts includes with the server its own Web server software, Simple Mail Transfer Protocol and Post Office Protocol 3 e-mail implementations, and development programming software. The software suite can also be purchased separately to run on other devices.

The server comes standard with one Ethernet connection and takes about 10 minutes to set up, says Periasamy, who formed Technauts a little more than a year ago with fellow Cisco alumnus Wayne Clark, the start-up's chief technology officer.

Once in operation, the e-Server 150 can support a network of around 125 Unix, Macintosh and Windows clients. As a Web server, the box can handle six million hits per day. The server can also process half a million pieces of e-mail daily.

Security is handled within the box. To protect classified Web documents, IS managers can define different classes of users with varying privileges and assign the users passwords for access. Technauts also provides software for defining which domains the server can accept e-mail from, in order to filter out junk messages. Administrators can configure the box via a Java-enabled Web browser.

The box got a thumbs up from one beta user who deployed it on his internal net. "It's simple and easy to use, and much smaller than you'd expect," says Daniel Stevenson, chief technology officer at Secant Network Technologies, a maker of ATM products here. He's been using the device to host Web documents across a network of Solaris, Macintosh and NT machines. Stevenson plans to start using the box to support customers as well.

The e-Server 150 costs $1,895 and is shipping now. The next edition, the 152, will be released shortly and will feature routing capabilities.

✆ Technauts: (800) 474-7006

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- **eServer 150 technical specs.**
- **News about other servers.**

www.nwfusion.com

Novell expands its control over NT nets

NDS for NT 2.0 hits open beta stage; company is targeting branch office sites.

By Christine Burns
Provo, Utah

Novell is hoping to branch out to branch offices with a new version of its NDS for NT directory software.

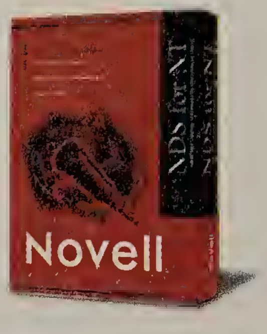
There are two main differences between the new edition of Novell Directory Services (NDS) for NT 2.0, which Novell last week said is heading into an open beta program, and the previous version.

First, Version 2.0 runs natively on Microsoft's network operating system. Second, the new edition gives network administrators tighter control over NT Server 4.0 resources using Novell's NWAdmin front-end directory management tool.

The target market for NDS for NT 2.0 is the branch office that uses NT for its primary net operating system and as an application platform, says Adam Smith, a Novell product marketing manager.

"With over one-third of all NT sales going into the branch office, we had to upgrade the product to work better in that setting," Smith says.

Version 1.0, released late last year, has been widely accepted in corporate environments as a tool for managing mixed NetWare and NT networks. But it hasn't made a dent in the branch office market because the current version requires the existence of a NetWare server sitting alongside of the NT box.



NDS for NT 2.0 *runs natively on NT.*

Better control over NT

NDS for NT 1.0 redirects client calls headed for NT's security database to NDS, thereby alleviating the need to administer parallel access rights for NT and NetWare users. NDS for NT 2.0 further consolidates user account administration by giving network managers the ability to create NT file shares, synchronize NT and NDS passwords, and manage all NT-based network objects, such as printers and scanners, via NDS.

Additionally, NDS for NT 2.0 lets customers run directory-enabled applications previously reserved for NetWare-only environments on top of NT Server. Such applications include Novell's ZENworks suite of desktop management tools.

The Chicago Mercantile Exchange plans to roll out NDS for NT 2.0 as part of its NetWare 5.0 migration later this fall. Jeff Miller, a senior network engineer at the Exchange, mainly wants to install NDS for NT 2.0 for granular management of NetWare and NT resources. "But picking up the ability to manage 800 client machines connected to both NetWare and NT servers using ZENworks is a huge bonus," he says.

PHH Vehicle Management Services in Hunt Valley, Md., has been using NDS for NT 1.0 for four months to manage user access to the company's NetWare file and print servers as well as NT application servers running Exchange, Internet Information Server and SQL Server.

While PHH Director of Technology Tim Talbot is interested in the new user and resource management capabilities in NDS for NT 2.0, he would like to see more integration between NDS and NT applications.

"We're dying for the ability to manage Exchange through NDS," Talbot says.

Novell has indicated that it will provide further integration with Exchange but has yet to commit to a delivery timeframe.

NDS for NT 2.0 beta code can be downloaded from Novell's Web site (www.support.novell.com/beta/public). Smith says the product will ship early in the fourth quarter.

While Novell has yet to set pricing for NDS for NT 2.0, industry analysts expect it to cost about $26 per user, as is the case with the current release.

Novell: (800) 453-1267

Seaway

Continued from page 17

centers along the Seaway to report the vessel's name, country of origin, direction, length, cargo, destination port and estimated times of arrival at Seaway locks and landmarks.

Pilots also call in any incidents such as groundings or delays in arrival.

SLSDC personnel at the Eisenhower Lock here manually log the data into a FoxPro database, organize it into a report and fax it to other traffic control points and to the DOT over 19.2K bit/sec dial-up connections.

"NetWare is for file accessing and printing," Phillips says. "Everything else — all the queries and stuff like that — is done through the FoxPro application."

That's it: simple, straightforward and unglamorous.

Nonetheless, Seaway traffic control is installing a new, graphically augmented Windows NT-based system that will allow U.S. and Canadian lock operators to share consistent vessel tracking information in real time.

FoxPro applications will be rewritten in Visual Basic and vessel-tracking data will be accessible via point-and-click commands on 29-inch color monitors with graphical representations of the ships. Five such monitors will share a single NT database server.

The new system will retain two key components from the old, however: NetWare 3.12 for file and print sharing, and 10Base-T shared Ethernet, Phillips says. ■

WIRED WINDOWS

For Novell, everything old is new again

While I keep an eagle eye on all things Microsoft for this column, I try to pay close attention to what rival Novell is up to as well. I spent a couple of days late last month in Provo, Utah, primarily to preview NetWare 5, but also to look at the other products Novell is readying for shipment between now and year-end.

And while NetWare 5 is impressive, it was two other products that showed me Novell's new direction as well as the company's return to its roots.

Dave Kearns

Novell Directory Services (NDS) for NT and ZENworks show an understanding of how networking can be used to reduce the total cost of computing. This gets back to Novell's origins.

The Novell offerings enable products from other vendors, particularly Microsoft, to be maintained and supported with fewer administrators, fewer trips to the user's desk and greater administrative control from a single point. This integration with other vendors' products points to Novell's new direction.

NDS for NT 2.0 should at least be evaluated by anyone with an NT network. The bigger the network, the more appealing the product should be. See this week's *Fusion Focus on NT* newsletter (www.nwfusion.com/focus) and the above story for more information.

ZENworks 1.1 will do for your NT and Windows desktops what Microsoft's Zero Administration initiative only promised. With ZENworks, you can centrally create and manage policies and mandatory user profiles; centrally build hardware inventories for all your Windows NT and 95 workstations in NDS; and distribute, manage and update applications on Windows-based workstations across your network.

The product's policy management features, in particular, are designed from the administrator's point of view. With Novell's NWAdmin utility, you can create what are called policy packages. One package, for example, can be designed for a specific desktop operating system, while another might be created for specific hardware, and still another for a group of end users. Packages can also be designed for individuals, so their policies can be fine-tuned to best define the desktop for their use. By combining the operating system, hardware, group and user policies, administrators can create the right desktop configuration for each user, regardless of where the user logs on to the network.

Application management is just as granular — with the ability to customize the applications shown to a user based on the platform and location from which the user logs on. When you add inventory management and the ability to remotely control a user's computer, ZENworks 1.1 looks like a real time and money saver.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

Cisco kicked off national TV advertising a couple of weeks ago, and in my opinion, the ads make Microsoft's "Where Do You Want To Go Today?" campaign look like a marvel of information-packed blurbs. If you haven't seen Cisco's ads on the tube, you can view them online with the Real Audio video player. Point your browser to www.cisco.com/warp/public/750/ads.html, check out the ads, then let Cisco know what you think. Copy me (wired@vquill.com) with your thoughts, too.

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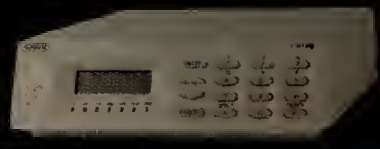

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Briefs

■ **Motorola** *recently introduced a* **card that doubles the number of voice ports** *supported by the company's* **Vanguard** *frame relay access devices. The new card has two ports and fits in the chassis of the Vanguard 100, 305, 320, 6430 and 6450. The card can be configured to use 5.3K bit/sec, 6.3K bit/sec or 8K bit/sec per voice channel. The card is available now and costs $650.*

✆ Motorola: (508) 261-4000

■ **Pace Micro Technology** *and* **Cisco** *last week announced an agreement to develop* **multimedia set-top boxes** *for integrated cable-based digital television, Internet data and telephony services. The first of the new products is expected to begin limited rollout late this year, the companies said.*

Under the alliance, Pace will license Cisco's NetWorks Internet technologies to provide high-speed IP-based communication for Pace's digital receiver/decoders. The two companies will jointly develop a range of set-top boxes, including products that provide Ethernet and voice telephony-over-IP gateway support.

✆ Cisco: (408) 526-4000

■ **Envive** *last week announced a* **software suite for managing service levels at companies that use SAP R/3.** *The suite includes application monitoring, service-level reporting and diagnostic functions to keep the R/3 performance and availability high. The three applications in the suite are Service Level Manager, Stopwatch Pro and Inspector. Service Level Manager builds an end-user view of R/3, Stopwatch Pro measures end-to-end response time, and Inspector notifies users of problems. The suite is shipping now. Pricing starts at $57,000 for 200 R/3 users.*

✆ Envive: (888) 236-8483

Remedy ties help desk to Oracle, SAP apps

Integrated packages should help users share support costs.

By Jeff Caruso

Mountain View, Calif.

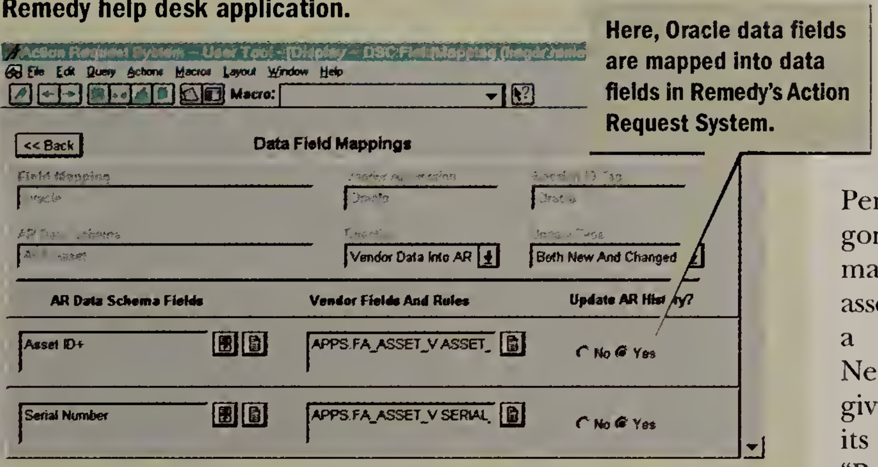
For companies that want to link the help desk with the bottom line, Remedy this week will release new and freshly rewritten management applications that can hook to back-office software from Oracle and SAP.

The management suite bundles Remedy's traditional help desk software with applications for tracking purchases, assets, changes and service levels. The suite, based on Remedy's Action Request System, can link to Oracle and SAP Enterprise Resource Planning (ERP) software. Therefore, when a user calls in with a problem, the help desk can retrieve current information about the user's system. ERP applications track business and financial data about a firm.

Lockheed is looking into tapping its multiple implementations of SAP's application through Remedy's software, says Mike Mora, Lockheed's manager of enterprise support services. The firm hopes to shave its support costs by providing asset information to help desk consultants. Knowing more about users' end systems should cut the time it takes to solve their problems, thus making the consultants more efficient, Mora says.

ONE TO ONE

Users can now link any Oracle back-office application to any Remedy help desk application.


Action Request System – User Tool – [Display – DSC:FieldMapping
File Edit Query Actions Macros Layout Window Help
Macro:
<< Back

Data Field Mappings

Vendor Data Into AR

Both New And Changed

AR Data Schema Fields	Vendor Fields And Rules	Update AR History?
Asset ID+	APPS.FA_ASSET_V.ASSET_	○ No ● Yes
Serial Number	APPS.FA_ASSET_V.SERIAL_	○ No ● Yes

Here, Oracle data fields are mapped into data fields in Remedy's Action Request System.

This level of integration isn't a slam-dunk, says Colin Mahoney, an analyst at The Yankee Group: "Mapping the data can be quite difficult."

The integration is important for customer-care systems, as well, Mahoney points out. Remedy is moving in this direction, tailoring its software to handle customer requests as well as internal help.

Mahoney cautions that not all companies will want to tie their help desk systems to their ERP packages. Some companies will be afraid that linking help desks to ERP systems could make the less reliable help desk bring down the ERP. Still, he says, most help desk software vendors are likely to follow suit with ERP links of their own.

Remedy rewrote its asset- and change-management programs to better integrate them with the help desk. Previously, there was little integration.

The asset-management system now tracks what assets are linked to others. For example, administrators can know how many systems are dependent on a certain router. If the router goes down, the help desk will know the impact that loss will have on users, says Matt Miller, vice president of marketing at Remedy.

The change-management system now includes an approval-management system that seeks approval for any changes from all the appropriate people.

The Yankee Group's Mahoney says Remedy is positioning the suite to compete more directly with Peregrine Systems, which has gone after the high end of the market with software that tracks assets through their life cycle in a company. Peregrine and Network Associates have been giving Remedy a run for its money, Mahoney adds. "Remedy had to one-up them somehow," he says.

Remedy is shipping the help desk software, asset management and Oracle link this week. The purchasing, service-level and change-management software will ship in the fourth quarter. The SAP interfaces will ship in early 1999. Each of the modules are available separately, starting at $15,000.

✆ Remedy: (650) 903-5200

Get more online:

- **Advice on setting up a help desk.**
- **Papers on ERP.**

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RedCreek Communications offers users more VPN security options

By Denise Pappalardo

Newark, Calif.

There is no simple cookie-cutter way to address security for all businesses, which is why RedCreek Communications is trying to give users more choices when setting up a secure virtual private network (VPN).

This week, RedCreek is rolling out Ravlin 3.0 software for its family of Ravlin hardware encryption devices. The devices are deployed at VPN user sites to securely send and receive data via the Internet.

Ravlin 3.0 adds support for features that are part of the IETF's pending IP Security (IPSec) protocol. IPSec is a standards-based specification that defines security for private communications across an enterprise network. The features will let users choose how they send traffic over the 'Net.

For example, Ravlin 3.0 adds support for IPSec Encapsulating Security Payload (ESP) transport to enable device-to-device encryption. The software also supports authentication header tunneling, which encapsulates only the header of an IP packet. In addition, the package adds authentication header transport support for device-to-device IP header encapsulation.

Prior to RedCreek's Ravlin 3.0 release, the software supported only IPSec ESP tunneling, which lets users encrypt their data packets and encapsulate the packets' IP header, explains Cary Hayward, product marketing manager at RedCreek. ESP tunneling is the strongest, most secure way to transport packets over the Internet, but it can slow packets because encryption adds overhead, Hayward says.

Ravlin 3.0 will let users send traffic using authentication header tunneling when they have less critical traffic to transport.

Meanwhile, other users on the same VPN can use ESP for more sensitive information.

"There is a benefit to supporting both ESP and authentication header tunneling on the same network," says Louis Gary, network manager at Glen Allen, Va., Hamilton Beach/Proctor-Sylex. "Because overhead is an issue when using encryption and encapsulation, it would be nice to have the flexibility to send some traffic using authentication header encapsulation tunneling, Gary says.

Ravlin 3.0 includes client software for Microsoft's Windows NT and 98. Ravlin 3.0 is available now and is free for current Ravlin customers.

✆ RedCreek: (510) 745-3900

INTERNETWORKING MONITOR

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We build fast networks, ultimately, to help applications deliver unprecedented throughput. An unstated but assumed premise is applications are able to drive the newly found bandwidth. Unfortunately, that's rarely the case. In this day of high-density, wire-speed, Layer 3 switches, the application — not the underlying network — is usually the bottleneck.

It's time for application vendors to take a serious look at rearchitecting and redeveloping key applications to take advantage of the high-bandwidth networks now being deployed.

Most applications were designed and developed when 10M bit/sec Ethernet was the highest LAN bandwidth available. This bandwidth usually had to be shared among 50 or more stations. Then, an application that consumed more than 1M or 2M bit/sec in such a bandwidth-constrained environment would be exhibiting behavior that was not just antisocial but downright destructive.

Applications were unintentionally self-limiting. Writing to high-level APIs, developers contributed to sluggish network throughput. Run-time configurations using default protocol settings typically resulted in traffic high in small frames and acknowledgment packets, both of which can throttle traffic flows. Still, these applications appeared "relatively" fast.

Kevin Tolly

That all changed when Ethernet switching and Fast Ethernet arrived on the scene. No longer was a fraction of 10M bit/ sec a reasonable cap on application bandwidth consumption. With the arrival of Gigabit speeds, the sky is the limit. But applications just can't keep up.

Here's a sampling of what application developers need to address.

Application efficiency: It's time to rewrite key routines in a lower level language, such as assembly rather than C++, to reduce the application cycles required to process data. Effective network utilization is often low simply because the network adapters are waiting for the application.

Protocol stack efficiency: As noted earlier, simple tuning to optimize the frame and window size can improve network throughput dramatically. In the 16-bit world, several companies made a living providing compatible alternatives to Microsoft's protocol stacks.

I find it astonishing that the third-party protocol stack has disappeared since the debut of Microsoft's 32-bit operating systems. I doubt Microsoft builds the highest performance TCP/IP stack possible.

Parallel multitasking: For companies serious about building turbocharged, giga-applications, radical application redesign will be necessary. There is no way a single datastream can use gigabit-speed links effectively. Parallel multitasking usually reserved for more exotic, scientific applications may be required for more mundane tasks.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300 or at ktolly@tolly.com or www.tolly.com.

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PROGRAM OVERVIEW

Virtual Private Networks (VPNs) promise to help build and extend your corporate network by leveraging the global reach of the Internet. Vendors are rushing to incorporate this technology into products ranging from routers to firewalls to remote access servers. Users are now wondering what's involved in deploying and managing VPNs, and how VPNs will be integrated with current network operations.

VPN '98 will help you determine the benefits and risks of VPNs by exploring all aspects of this technology — from fundamentals to specific security issues — and how it stacks up against more private alternatives such as frame relay and leased line solutions.

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SPECIAL FOCUS

Wave division multiplexing

WDM: Follow the light

Tim Greene

Corporate enterprises are beginning to mimic carriers in their use of wave division multiplexing (WDM) to boost the speed and capacity of fiber-optic links — without installing more fiber.

While expensive and potentially of limited use in private networks, WDM can solve knotty and costly problems that could otherwise plague net managers. The idea behind WDM is simple: to provide high-speed interconnection among widely scattered sites. WDM is also important as a means to set up multiple data centers, disaster recovery or CPU redundancy.

With WDM, discrete colors of light become high-bandwidth channels for carrying data over a strand of fiber. All the user has to do is install wave division multiplexers at both ends of existing fiber spans. This is a step up from older fiber-optic systems that require a fiber pair for each channel.

The primary value of WDM lies in expanding the capacity of existing fiber networks without laying more fiber, says Tom Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J. "If I have 500 miles of glass in the ground and I want to add fiber, that means I have to dig it all up to add that fiber. . . . You see the problem," Nolle says.

Adding fiber simply costs too much, so WDM is particularly popular among carriers that otherwise would have to install thousands of miles of new fiber to boost capacity. Prices typically fall into the $250,000 range for a single WDM box, and that doesn't include the cost of the fiber (see graphic). But vendors are targeting enterprise customers as well. The market leaders include Inrange Technologies and Osicom, according to Lawrence Gasman, an analyst with Communications Industry Researchers.

Enterprise customers

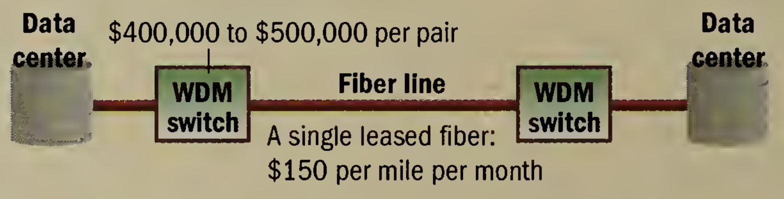
Inexpensively adding bandwidth to its existing fiber lines was the problem facing NationsBank of Charlotte, N.C. The bank has fiber between buildings on its campuses, in some cases as many as 48 pairs. Those carry a mix of voice, token-ring, Ethernet and FDDI traffic. But the bank needs even more bandwidth to handle ever-expanding LAN traffic, says Thor Draper, test bed manager for the bank.

According to Draper, "Running new fiber is practically impossible because of rights of way." This is creating problems. For example, the bank wants to move a trading floor from one site to another. That will require more data and voice links into the new site. But using older fiber technologies, the traffic would require 24 fiber lines, which is more than the bank has connecting to that site.

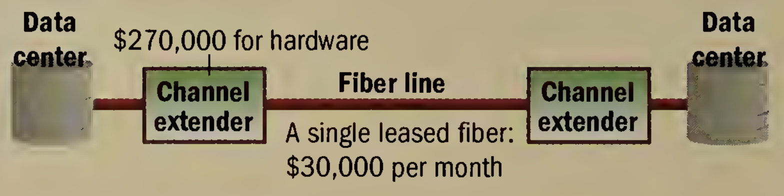
Instead, the bank will use wave division multiplexers from Inrange to put all traffic on one or two strands. By doing that, the firm will free up fibers that can be used in the future, Draper says.

THE COST OF WAVE DIVISION MULTIPLEXING

The projected cost of linking two corporate data centers 10 miles apart over 10 fiber channels using WDM:


Data center
$400,000 to $500,000 per pair
Data center
WDM switch
Fiber line
WDM switch
A single leased fiber: $150 per mile per month

The cost of linking two data centers via 20 fiber strands and channel extenders:



SOURCE: COMMUNICATIONS INDUSTRY RESEARCHERS

In neighboring South Carolina, the state government had no existing fiber but wanted to use fiber technology to extend the reach of a new mainframe to peripheral resources such as tape drives, communications controllers and check printers.

The state had six or seven small mainframe data centers and decided to consolidate those centers into a single large facility capable of serving all state departments, said Larry Strock, data communications manager for South Carolina's office of information resources.

Last week, the state deployed the new centrally located mainframe for the state Department of Social Services (DSS), using WDM to connect the computer to the old DSS data center where the tape drives and other peripherals reside.

South Carolina is also using WDM to replace IBM's Enterprise System Connectivity (ESCON) technology, which requires repeaters every 1.86 miles. ESCON is IBM's fiber-optic mainframe channel connectivity technology.

WDM requires no repeaters over the six-mile span between the data center and the DSS. And WDM is supporting eight 17M-byte/sec channels on a single fiber pair, Strock says.

Eventually, DSS tape drives and other peripherals will be housed in the central data center, where they can be linked locally without WDM. Then the multiplexers will be reused to gradually transfer other departments to the new data center.

Strock says he also likes the WDM multiplexers because they are flexible. "What's so sweet about those boys is they are protocol-independent. You can send ATM through them, FDDI, anything. The muxes do not open up the packets or cells or whatever you are putting through. They just send it down the line at up to 200M bit/sec per channel," Strock says.

While some customers have found WDM useful, Nolle insists it is not cost-effective for most enterprise users until bandwidth demands reach OC-48 or 2.4G bit/sec. At speeds lower than OC-48, SONET is less expensive, Nolle says.

WDM might be useful for enterprise applications — such as linking dual corporate data centers, multilocation manufacturing businesses, hospitals and financial institutions — in which big bandwidth is essential.

Enterprise users might want to consider WDM even though they do not already have an existing fiber network, Strock says. He says South Carolina leases its two pairs of fiber for about $2,000 per month per pair. "That's not bad. That's what a T-1 cost a couple of years ago. There's plenty of fiber out there with cable TV providers using fiber and public utilities installing fiber," Strock says.

Even so, WDM will not be for everyone, Gasman says. He estimates the number of enterprises worldwide that might find WDM useful is in the thousands. "WDM in the enterprise is a new and interesting niche, but it is a very small part of the market. It is only the sophisticated end user that even thinks about doing this," Gasman says. ■

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TS9BE

1. What is the principal business activity at your location?
(check ONE only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable /Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/Petroleum Refining/ Agriculture/Forestry)
12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consulting (Independent)*
16. ☐ Carriers/Interconnects
17. ☐ Internet Service Provider (ISP)
18. ☐ Manufacturing (Computer/Communications/OEM)
19. ☐ Resellers of Computer/Network Products (VARs, VADs)
20. ☐ Systems/Network Integrators*
21. ☐ Distributors (Computer/Communications)*
22. ☐ Other *(please specify)* ______________

****Please complete form based on largest client.***

2. What is your job function?
(check ONE only)

NETWORK IS MANAGEMENT:

1. ☐ Network Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS/IT/MIS/CIO/Systems Management
5. ☐ Internet/Intranet/Electronic Commerce Mgmt., Webmaster
6. ☐ Engineering Management
7. ☐ Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management)
8. ☐ Consultant (Independent)
9. ☐ Other *(please specify)* ______________

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?
(Please **print** the appropriate **number code** on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 to $24.9 Million
5. $1 to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/Workstations)*
C ____ Servers
D ____ LANs
E ____ WAN Equipment
F ____ Carrier Services
G ____ Internetworking
H ____ Internet
I ____ Intranet
J ____ Extranet
K ____ Remote Access
L ____ Peripherals
M ____ Software
N ____ Service/Support

4. What is the total number of sites for which you have purchase influence?
(check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization?
(check ONE box in each column)

SERVERS At Location A		SERVERS Entire Org. B	CLIENTS At Location C		CLIENTS Entire Org. D	LANS At Location E		LANS Entire Org. F
☐	1. 50,000+	☐	☐	1. 50,000+	☐	☐	1. 50,000+	☐
☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐
☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐
☐	4. 100 to 999	☐	☐	4. 100 to 999	☐	☐	4. 100 to 999	☐
☐	5. 50 to 99	☐	☐	5. 50 to 99	☐	☐	5. 50 to 99	☐
☐	6. 10 to 49	☐	☐	6. 10 to 49	☐	☐	6. 10 to 49	☐
☐	7. 1 to 9	☐	☐	7. 1 to 9	☐	☐	7. 1 to 9	☐
☐	8. none	☐	☐	8. none	☐	☐	8. none	☐

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)

1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization?
(check ONE in each section)

A. At your location:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 249 or less

B. Entire organization:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

8. Please indicate the products/services that you are currently involved in purchasing or plan to purchase:
(check ALL that apply)

A. Currently Involved in purchasing **B. Plan to purchase**

INTERNET/INTRANET

A B
- ☐ 01. ☐ Internet Services/Web Hosting
- ☐ 02. ☐ Firewalls/Security/Encryption
- ☐ 03. ☐ Web Servers/Software
- ☐ 04. ☐ Web Servers/Hardware
- ☐ 05. ☐ TCP/IP Software
- ☐ 06. ☐ Management/Monitoring Software
- ☐ 07. ☐ Voice/Video Over IP
- ☐ 08. ☐ VPN Equipment/Services
- ☐ 09. ☐ Legacy Integration Tools (Web to Host)
- ☐ 10. ☐ Web Development Tools (JAVA, ActiveX, etc.)
- ☐ 11. ☐ Push Technology
- ☐ 12. ☐ Web Browsers
- ☐ 13. ☐ Intranet Applications/Groupware
- ☐ 14. ☐ Search/Retrieval Products (web crawler)
- ☐ 15. ☐ Electronic Commerce Tools
- ☐ 16. ☐ Web Authoring Tools
- ☐ 17. ☐ Other *(please specify)* ______________

LOCAL-AREA NETWORKS/INTERNETWORKING

A B
- ☐ 18. ☐ Local-Area Networks
- ☐ 19. ☐ Network Operating System Software
- ☐ 20. ☐ Servers
- ☐ 21. ☐ Print Servers
- ☐ 22. ☐ Routers
- ☐ 23. ☐ ATM Switches
- ☐ 24. ☐ Token-Ring Switches
- ☐ 25. ☐ Ethernet Switches
- ☐ 26. ☐ Fast Ethernet
- ☐ 27. ☐ Gigabit Ethernet
- ☐ 28. ☐ Layer 3 Switches
- ☐ 29. ☐ Network Storage Devices (NASs, SANs)
- ☐ 30. ☐ LAN Storage/Backup
- ☐ 31. ☐ Optical Storage/Backup/Jukeboxes
- ☐ 32. ☐ Disk Storage/Backup
- ☐ 33. ☐ Tape Storage/Backup
- ☐ 34. ☐ RAID Storage/Backup
- ☐ 35. ☐ Network Test/Diagnostic Tools
- ☐ 36. ☐ Cables, Connectors, Baluns
- ☐ 37. ☐ UPS
- ☐ 38. ☐ Network Interface Cards (NICs)
- ☐ 39. ☐ Hubs
- ☐ 40. ☐ Intelligent Hubs
- ☐ 41. ☐ Stackable Hubs
- ☐ 42. ☐ Bridge/Router
- ☐ 43. ☐ SNMP Network Management
- ☐ 44. ☐ Gateways
- ☐ 45. ☐ Concentrators/Repeaters
- ☐ 46. ☐ Other *(please specify)* ______________

COMPUTERS/PERIPHERALS

A B
- ☐ 47. ☐ Thin Clients/Network Computers (NCs)
- ☐ 48. ☐ Laptops/Notebooks/Sub-Notebooks
- ☐ 49. ☐ Micros/PCs
- ☐ 50. ☐ Minis
- ☐ 51. ☐ Mainframes
- ☐ 52. ☐ Workstations
- ☐ 53. ☐ Printers/Network Printers
- ☐ 54. ☐ CD-ROM/DVD
- ☐ 55. ☐ Fax/Modem Boards
- ☐ 56. ☐ Memory/Chips/Boards/Cards
- ☐ 57. ☐ Other *(please specify)* ______________

REMOTE/WIRELESS COMPUTING

A B
- ☐ 58. ☐ Remote Access Products
- ☐ 59. ☐ Remote Access Services
- ☐ 60. ☐ PDAs
- ☐ 61. ☐ PCMCIA Devices
- ☐ 62. ☐ Wireless Data Equipment/Services
- ☐ 63. ☐ Cellular Equipment & Services
- ☐ 64. ☐ Other *(please specify)* ______________

SOFTWARE/APPLICATIONS

A B
- ☐ 65. ☐ Network Management
- ☐ 66. ☐ Systems Management
- ☐ 67. ☐ Security
- ☐ 68. ☐ Communications Software
- ☐ 69. ☐ Terminal Emulation
- ☐ 70. ☐ Operating Systems
- ☐ 71. ☐ Applications Development Tools
- ☐ 72. ☐ Database Management/RDBMS
- ☐ 73. ☐ Groupware
- ☐ 74. ☐ Workflow
- ☐ 75. ☐ EDI
- ☐ 76. ☐ E-mail
- ☐ 77. ☐ Desktop Videoconferencing
- ☐ 78. ☐ Imaging
- ☐ 79. ☐ Suites/Server Suites (Back Office, etc.)
- ☐ 80. ☐ Middleware
- ☐ 81. ☐ Document Management
- ☐ 82. ☐ Site Metering Tools
- ☐ 83. ☐ Computer Telephony Integration (CTI)
- ☐ 84. ☐ Data Warehousing
- ☐ 85. ☐ Anti Virus Software
- ☐ 86. ☐ Multimedia
- ☐ 87. ☐ Yr. 2000 Conversion Software (Y2K)
- ☐ 88. ☐ Helpdesk
- ☐ 89. ☐ Web Based Management Tools
- ☐ 90. ☐ Directory Services
- ☐ 91. ☐ Other *(please specify)* ______________

WIDE-AREA NETWORK EQUIPMENT & SERVICES

A B
- ☐ 92. ☐ 56 Kbps Modems
- ☐ 93. ☐ Under 56 Kbps Modems
- ☐ 94. ☐ Cable Modems
- ☐ 95. ☐ Asynchronous Transfer Mode (ATM)
- ☐ 96. ☐ Frame Relay Equipment/Services
- ☐ 97. ☐ ISDN Equipment & Services
- ☐ 98. ☐ FT-1/T-1/T-3 Multiplexers/Services
- ☐ 99. ☐ xDSL Services/Products
- ☐ 100. ☐ Diagnostic/Test Equipment
- ☐ 101. ☐ DSU/CSU
- ☐ 102. ☐ PBXs
- ☐ 103. ☐ Videoconferencing
- ☐ 104. ☐ Leased Lines
- ☐ 105. ☐ Switched Data
- ☐ 106. ☐ Virtual Private Networks (VPN)
- ☐ 107. ☐ FRADs
- ☐ 108. ☐ Managed LAN/Router Services
- ☐ 109. ☐ Other *(please specify)* ______________
- ☐ 110. ☐ Outsourcing/Systems Integration Services
- ☐ 111. ☐ Education/Training Services
- ☐ 112. ☐ None of the above (1 – 111)

9. Please indicate the platforms that are currently installed/planned:
(check ALL that apply)

A. Currently installed **B. Planned for purchase**

NETWORK PROTOCOLS

A B
- ☐ 01. ☐ TCP/IP
- ☐ 02. ☐ IPv6
- ☐ 03. ☐ SNA
- ☐ 04. ☐ Novell IPX/SPX
- ☐ 05. ☐ APPC/APPN/LU 6.2
- ☐ 06. ☐ NETBIOS
- ☐ 07. ☐ NFS
- ☐ 08. ☐ SNMP
- ☐ 09. ☐ Other *(please specify)* ______________

LAN ENVIRONMENT

A B
- ☐ 10. ☐ Gigabit Ethernet
- ☐ 11. ☐ Switched Ethernet
- ☐ 12. ☐ Fast Ethernet (100 Megabit Ethernet)
- ☐ 13. ☐ Ethernet
- ☐ 14. ☐ ATM
- ☐ 15. ☐ Token Ring/Token Ring Switching
- ☐ 16. ☐ IP Switching
- ☐ 17. ☐ Layer 3 Switching
- ☐ 18. ☐ FDDI
- ☐ 19. ☐ 100Base-T
- ☐ 20. ☐ 10Base-T
- ☐ 21. ☐ Fibre Channel
- ☐ 22. ☐ Other *(please specify)* ______________

NETWORK OPERATING SYSTEM

A B
- ☐ 23. ☐ Windows NT
- ☐ 24. ☐ Windows NT/Advanced Server
- ☐ 25. ☐ Novell IntranetWare
- ☐ 26. ☐ Novell (NetWare 5.X)
- ☐ 27. ☐ Novell (NetWare 4.X)
- ☐ 28. ☐ Novell (NetWare 2.X, 3.X)
- ☐ 29. ☐ Microsoft (LAN Manager)
- ☐ 30. ☐ Banyan (VINES)
- ☐ 31. ☐ IBM (Server)
- ☐ 32. ☐ Other *(please specify)* ______________

COMPUTER OPERATING SYSTEM

A B
- ☐ 33. ☐ NT Server
- ☐ 34. ☐ NT Workstation
- ☐ 35. ☐ Unix/Xenix/AIX/SCO
- ☐ 36. ☐ Solaris
- ☐ 37. ☐ Windows
- ☐ 38. ☐ Windows 95
- ☐ 39. ☐ Windows 98, .9x
- ☐ 40. ☐ DOS
- ☐ 41. ☐ OS/2, OS/2 Warp
- ☐ 42. ☐ IBM MVS/VM/VSE
- ☐ 43. ☐ Digital VMS
- ☐ 44. ☐ Macintosh
- ☐ 45. ☐ Other *(please specify)* ______________
- ☐ 46. ☐ None of the above (1 – 45)

10. Which of the following Servers/Clients do you have installed/planned at your location?
(check ALL that apply)

	A. Servers		B. Clients		A. Servers		B. Clients
Power PC	☐	01.	☐	486, 386, 286	☐	07.	☐
Power Mac	☐	02.	☐	Sun Sparc	☐	08.	☐
Mac Other	☐	03.	☐	Risc	☐	09.	☐
Multiprocessor Servers	☐	04.	☐	Alpha	☐	10.	☐
Pentium II (PII)	☐	05.	☐	Other	☐	11.	☐
Pentium/Pentium Pro	☐	06.	☐				

11. Which of the following hardware platforms are installed/planned in your company?
(check ALL that apply)

A - Mainframes (Large Scale)

1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other ______________

B - Minis (Midrange)

1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital
4. ☐ Tandem
5. ☐ Unisys
6. ☐ AT&T GIS
7. ☐ H-P
8. ☐ Data General
9. ☐ Other ______________

C - Workstations

1. ☐ Sun Microsystems
2. ☐ Silicon Graphics
3. ☐ Digital
4. ☐ H-P
5. ☐ IBM
6. ☐ Other______________

12. What is the estimated gross revenue of your entire company/institution?
(check ONE only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $499.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13. For which areas outside of North America do you have purchase influence?
(check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None

FORM: 9801

Please indicate the names and job functions of other individuals at your location to whom you would like us to send a copy of NetworkWorld.

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Name ______________________ Job Function ____________

Name ______________________ Job Function ____________

Name ______________________ Job Function ____________

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- ☑ Signed and dated the form
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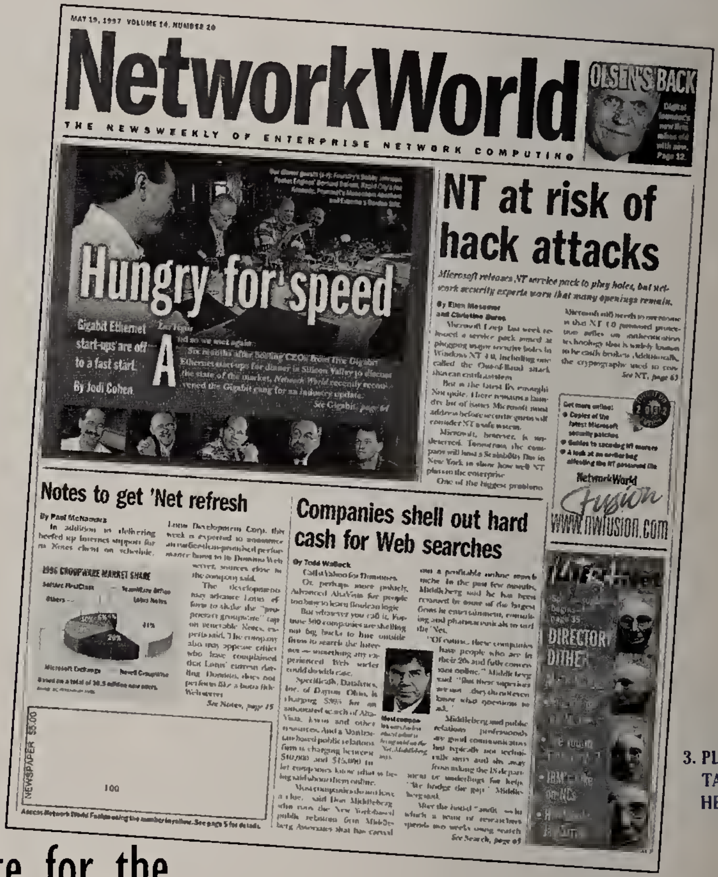
MAY 19, 1997 VOLUME 14, NUMBER 20

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

OLSEN'S BACK

Hungry for speed

Gigabit Ethernet start-ups are off to a fast start.

By Jodi Cohen

NT at risk of hack attacks

Microsoft releases NT service pack to plug holes, but network security experts warn that many openings remain.

Notes to get 'Net refresh

By Paul McNamara

1996 GROUPWARE MARKET SHARE

Companies shell out hard cash for Web searches

By Todd Wallack

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Carriers & ISPs

Covering: The Internet • Interexchange and Local Carriers • Wireless • Regulatory Affairs • Voice Equipment

Briefs

- *Competitive local exchange carrier* **E-spire Communications** *has announced* **new local networks** *in New York and Philadelphia. E-spire plans to connect the new local nets over broadband fiber to its existing network linking Baltimore and Washington, D.C. E-spire's New York presence will include the city, Westchester County and nearby parts of Long Island. The Philadelphia network will include the central business district only. Internet access in the new areas will begin in the fourth quarter, with voice and integrated access offerings on tap for the second quarter of 1999.*

- **ICG Netcom** *of Englewood, Colo., rolled out* **IP Long Distance telephony** *services late last month to 31 cities in Colorado, California and Ohio. The service lets users with an active Internet access account make telephone and fax calls over ICG Netcom's network for 5.9 cents per minute. But if the call terminates on another carrier's network the cost of the call increases to 8.9 cents per minute. ICG Netcom expects to have its IP telephony services available in 166 cities by year-end.*

  ✆ ICG Netcom: (888) 424-1144

- **Voice & Data Systems** *is rolling out* **RealFax services** *at the Voice on the Net conference in Washington, D.C. next week. Voice & Data Systems is targeting carriers and ISPs with its IP fax, which is expected to offer small to mid-size business users real-time, lower cost faxing services. When the service is launched, IP Universal, a Los Angeles ISP, and five other telephone companies are expected to offer their customers the Voice & Data Systems service.*

ITU takes a stab at lower int'l rates

World telecom governing body considering proposal to force rates down over three years.

By David Rohde

Washington, D.C.

The governing body for world telecom regulation is considering a new proposal to force member countries to reduce their key international rates over the next three years.

But international telecom experts say the reductions may not be big enough or happen fast enough to prevent users from trying to dial around the international switched telephone network in search of savings.

A Focus Group committee appointed by International Telecommunication Union (ITU) in Geneva devised the proposal and delivered it last week to ITU's Study Group 3, which handles tariff matters.

The Focus Group proposal divides the countries of the world into six categories according to their "teledensities," or number of telephones per 100 population.

Each of the six categories is assigned a benchmark settlement rate, which is the international equivalent of access and termination rates charged by regional Bell operating companies to complete domestic phone calls.

The settlement-rate benchmarks range from a low of 8 cents per minute to a high of 46 cents per minute, compared with typical domestic RBOC termination rates of 2 to 3 cents per minute (see graphic).

If adopted, the new ITU policy would go into effect Jan. 1, 1999. But each country in the six categories would have until Dec. 31, 2001 to bring settlement rates down to the benchmark.

Current average benchmarks across the world have been running as high as 85 cents per minute, according to the Federal Communications Commission. Still, the proposed reductions to the new rates did not impress many international observers.

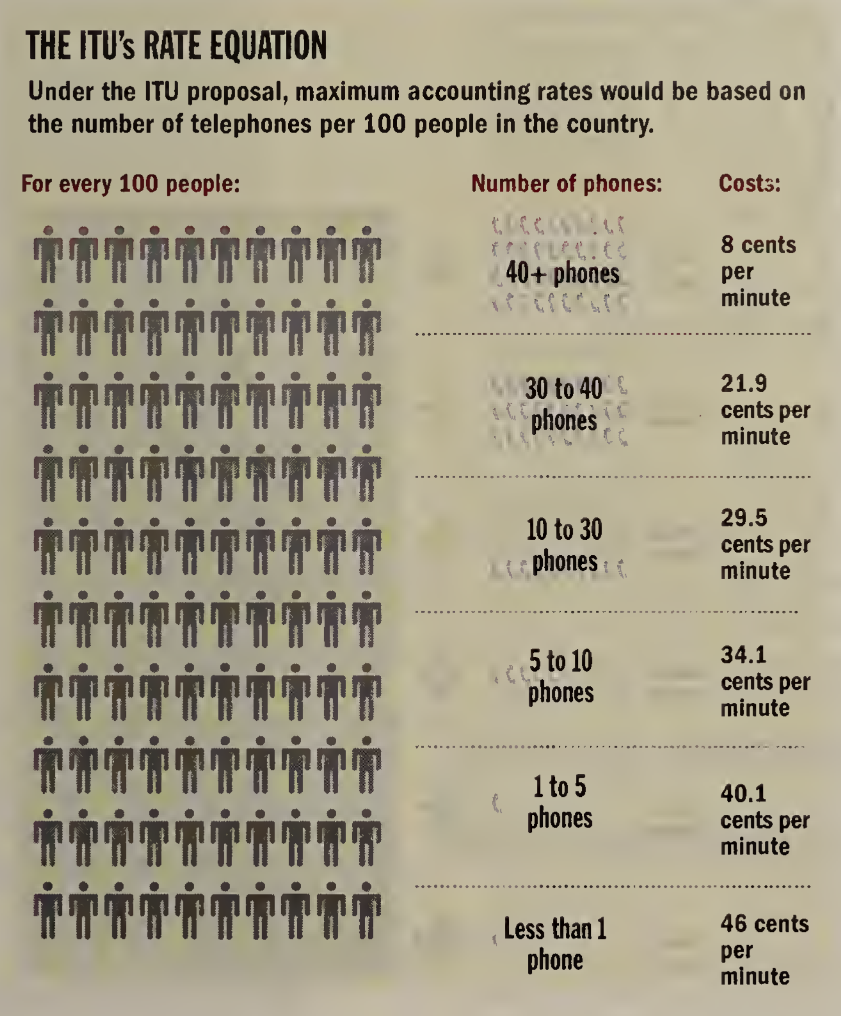
"This is a well-meaning endeavor, but it's too little, too late," says Scott Blake Harris, managing partner in the Washington, D.C. law firm of Harris, Wiltshire & Grannis.

The new rate range, even if implemented by the end of 2001, would still be inflated more than what many foreign carriers need to charge to cover their costs. "It does not even purport to bring them down to a cost-based rate," says Harris, who is a former chief of the FCC's International Bureau.

The ITU developed its proposal after a firestorm of criticism broke out against a tougher action taken last year by the FCC. The U.S. agency demanded that all foreign carriers bring their settlement rates down to a range of 15 to 23 cents per minute over a faster paced schedule whose first deadline is coming up at year-end.

Several foreign carriers sued the FCC in U.S. appeals court here, complaining that a U.S. government agency has no business regulating international traffic. Harris countered that the FCC policy is really a directive to U.S. carriers not to pay anything greater than the 15- to 23-cent range. If a U.S. carrier complies with the policy and a foreign carrier therefore refuses to carry the U.S. carrier's traffic, then the calls will be completed via routing through a third country, Harris says.

The ITU Focus Group is seeking comments on its proposal by Nov. 6 before making a final ruling. ■



THE ITU's RATE EQUATION

Under the ITU proposal, maximum accounting rates would be based on the number of telephones per 100 people in the country.

Number of phones:	Costs:
40+ phones	8 cents per minute
30 to 40 phones	21.9 cents per minute
10 to 30 phones	29.5 cents per minute
5 to 10 phones	34.1 cents per minute
1 to 5 phones	40.1 cents per minute
Less than 1 phone	46 cents per minute

Get more online:

8733

- **A downloadable spreadsheet of current accounting rates.**
- **The text of the ITU proposal.**
- **A look at the potential impact of FCC international rate action on the convergence of data and voice onto a single network.**

www.nwfusion.com

Canadian wireless users jump into the fire

By Denise Pappalardo

If you're a wireless phone user looking for an easier way to manage your incoming and outgoing calls, Wildfire may answer your burning needs.

Bell Mobility of Toronto and Wildfire Communications last week rolled out Wildfire service for Bell's cellular and personal communications service (PCS) wireless customers. Wildfire is a speech recognition technology that lets users make calls, control their voice mail and employ call waiting without touching their telephone keypad.

Although Wildfire has worked with a handful of service providers for about two years, one user doesn't seem to mind the wait.

"The voice recognition capabilities are unbelievable," says Bil Harmer, a systems administrator at Wired Solutions, a Toronto Web page design and development firm. "I've used some other speech recognition programs, and they were horrible. With Wildfire, I said three words, and that was it. It never asks me to repeat a command," he adds.

Bell Mobility's Wildfire service will only be available in Toronto when first introduced. Pacific Bell Mobile Services, CenturyTel and BellSouth have conducted Wildfire service trials, but none have announced plans to offer the service.

Bell Mobility's Wildfire service will cost $13 to $19 per month depending on extra service features.

✆ Bell Mobility: (416) 213-9453

EYE ON THE CARRIERS

Where are the big savings?

If you've been skeptical about IP telephony, you'll be glad to know carriers are now adding features that make it look more like regular corporate dialing plans. But then you'll probably choke on the price of the new features. And that calls in to question what was supposed to be the point of IP telephony — saving money.

Take, for example, a trial of IP telephony AT&T has under way called Connect 'N Save. Don't worry about the goofy name; it's really pitched at a broad consumer market. Besides, right now it's only available under trial in three cities — Boston, Atlanta and San Francisco. In fact, that's part of the problem — what if you live in one of those cities but you're not there when you want to make a call?

AT&T now says you can dial a toll-free number to obtain remote access. Well, as a network administrator, you probably already know the problems with "toll-free" access when it comes to anything Internet-related.

Just as ISPs will often charge additional fees when you use 800 access for your users' data sessions, AT&T charges extra for this nationwide voice IP access. The fee increases to 20 cents per minute from the otherwise 7.5- to 8.5-cent charge when you dial the nationwide number.

Of course, on regular calling plans your calling card rates are higher than toll rates when dialed from the office. So that 20-cent-a-minute rate is another thing that may make you say, "Tell me again why IP telephony is taking over the world?"

AT&T is adding other features as well, but they are merely catch-ups to features available over the public switched telephone network. For example, Connect 'N Save trial users can now place multiple calls without having to re-access the service each time by punching in codes rather than hanging up. But that convenience has been available for a while on major carriers' regular calling plans.

David Rohde

AT&T is by no means the only carrier finding its costs for IP telephony aren't so inexpensive. ICG Communications, a competitive local carrier that went heavy into the IP provider business when it bought Netcom's 3,182-route-mile network, has introduced its IP telephony service in three states at the rate of 5.9 cents per minute.

But the rate only applies if you call within those states — in fact, you must call from one of the cities it supports to another. Otherwise, the off-net calls cost 8.9 cents.

Considering that Aunt Fanny probably doesn't have Internet telephony, and you can get 9-cent regular long distance from the major carriers just by signing up online, this doesn't seem like much of a deal.

The off-net problem has its parallel in enterprise nets in which users are experimenting with voice over frame relay or ATM for a theoretical cost of zero cents but have yet to figure out how to dial outside the company over the data infrastructure.

But it's the carriers that are making the claims that IP telephony is the great hope for toll avoidance in the future. There's a long way to go before these public carriers — IP or circuit-switched — can actually back up that claim.

Rohde is a senior editor with Network World. *He can be reached at drohde@nww.com.*

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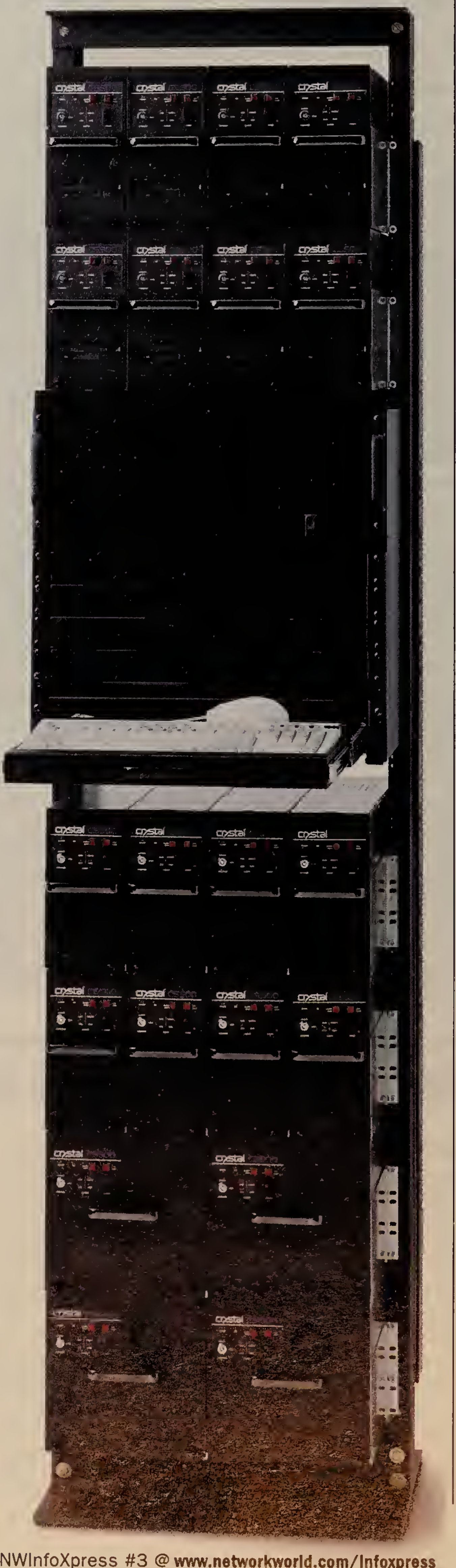

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Briefs

■ **Lotus** *this week will accelerate an ongoing effort to keep its 14 million* **cc:Mail** *users from defecting to another messaging platform. The Cambridge, Mass., IBM subsidiary will launch a series of half-day technical seminars slated for 39 North American cities. The seminars are designed to help cc:Mail customers sort through their Lotus upgrade options, which for many include the need to attain Year 2000 compliance. In July, the company announced a package of price incentives for cc:Mail customers. Details are available at www.lotus.com/migration.*

✆ Lotus: (781) 577-8500

■ **Electronic commerce start-up MetalExchange** *has made its debut, with company officials describing the Pittsburgh firm as a* **Web-based trading community for the steel industry.**

MetalExchange's *Peters*

MetalExchange's Web site will bring together steel-shaping companies, known in the industry as service centers, and steel manufacturers.

Christopher Peters, executive vice president of MetalExchange, says Weirton Steel, LTV Steel and Steel Dynamics are the three partners in the Web clearinghouse, which will use an electronic catalog-based product called Procurement for the Marketplace from Trade'ex Electronic Commerce Procurement Systems.

Peters says buyers will pay nothing to join the online community, but sellers will have to give MetalExchange 2% of what they sell online. He adds that the MetalExchange partners have already spent $3 million in the past two years planning how to handle online procurement.

Start-up puts distributed data into context

Verano jumps into crowded knowledge management market with Web-based software.

By Chris Nerney
Mountain View, Calif.

Arguing that content without context is of dubious value, a start-up has launched its premiere product — software designed to give larger meaning to information stored on a corporate network.

Verano last week announced the availability of Illuminar, an enterprise application corporate workers can use to share, discover and manage data on their networks via any browser.

Illuminar is based on Verano's OpenWrap technology, which lets users add context, or metadata, that can describe and secure enterprise content, according to Robert Goldberg, Verano's vice president of marketing and sales.

Founded two years ago this month, Verano is the latest company to seek a niche in the knowledge management software market for corporate intranets.

That market now includes a number of companies, many of which repositioned themselves as revenue in their original markets diminished

Among the players in this growing industry segment are document management product vendors (OpenText and Documentum), Web publishing companies (Vignette and 2Bridge Software), a push technology start-up (BackWeb Technologies) and search engine vendors (Verity and Fulcrum Technologies). Throw in groupware giants Microsoft, Lotus and Novell, and the choices are bewildering for corporations trying to choose tools to help them effectively utilize their knowledge capital.

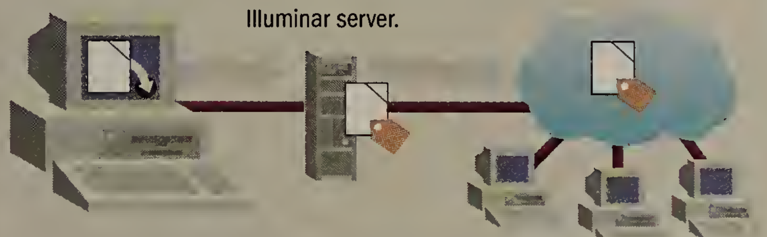
HOW ILLUMINAR WORKS

Verano's Web-based technology allows corporate workers to publish and access secure content across the enterprise.

❶ Author drags a document onto Illuminar's OpenWrap desktop icon.

❷ Author creates metadata tags, which provide information about the content, such as the author, and secure the content. The document can then be published to an Illuminar server.

❸ Users employ browsers to search content and contextual metadata to find information.



Verano — which is Spanish for "summer" — was founded by President and CEO Ron Buck, a former executive at computer manufacturers Pyramid Technology and nCUBE. Verano, which now employs about 20 people, was initially funded by Techfarm, a firm that provides seed funding for start-ups. Other investors include Chase Capital, Charter Venture Capital and Techfund Capital Management.

Verano's initial product consists of server and client software. The server software is plugged in to a Web server (Illuminar runs on Windows NT or Solaris servers and uses Netscape or Microsoft Web servers). The client software works with Windows and Macintosh systems and can be accessed with any Web browser.

Users wanting to put content on the Illuminar server drag information onto an OpenWrap icon. From there, they can access and complete metadata templates to identify the file's key contents (see graphic).

Metadata includes information such as author, project name, industry segment and expiration date. OpenWrap bundles metadata around the content, making it easier for users to find relevant information without needing to know where it is stored or whether it was created via e-mail, a word processor or a spreadsheet program.

Once stored on the Illuminar server, the package of metadata and content can be accessed by users via their browsers with a simple keyword search. Encryption technology protects files from unauthorized users.

Several customers, including 3Com, BEA Systems and Avid Technology, have beta-tested Illuminar, according to Verano.

Arthur Chiang, vice president of worldwide consulting services at middleware vendor BEA Systems, says his company's team of 200 consultants has been relying on e-mail to share information.

Using Illuminar, BEA has begun "to create a knowledge base of intellectual property so our consultants can quickly locate information that will help their customers," he says.

Illuminar pricing starts at $50,000 for up to 500 users and five servers.

✆ Verano: (650) 237-0200

2Bridge Software builds on Web publishing system

By Andy Eddy
San Francisco

2Bridge Software last week released a new version of its Web publishing software that makes it easier to track the process of constructing documents online.

2Share 2.0, like the original version, is designed to simplify intranet and extranet publishing, enabling users to deploy content to the World Wide Web without learning HTML coding. All of 2Share's functions take place via a standard browser, without requiring Java or ActiveX plug-ins.

2Share understands more than 100 data and file formats. In addition to supporting standard Web formats such as GIF, JPEG and RealAudio/Video, 2Bridge's software can convert such formats as Microsoft Office and Lotus Notes for HTML display.

New in Version 2.0 are tools for managing the collaborative process required to construct many online documents. Administration of the workflow enables the setting of permissions and read/write status as desired, as well as real-time tracking of a document's progress on its way to publication. By setting permissions, a company can ensure that only authorized people see particular data, such as employee salaries, confidential sales figures and price lists.

Other additions to Version 2.0 include a feature for personalizing the display of information — what 2Bridge calls an EnterprisePortal — enabling the viewing of focused content. Version 2.0 can also update users by e-mail when documents are updated.

2Share 2.0 runs on Windows NT and Solaris and is available now. Pricing for 2Share 2.0 starts at $45,000 with a per-user cost determined by quantity.

✆ 2Bridge: (800) 927-1200

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In-Site

Star struck on the World Wide Web

By Andy Eddy
Santa Monica, Calif.

As stock markets around the world are faltering and fluctuating, there is one market that's been on solid ground, bringing lucrative returns to its investors — though you may have never heard of it.

The Hollywood Stock Exchange (HSX) is a Web-based stock market simulator that, in place of gauging the value of companies and commodities, trades on the box-office receipts of films and the drawing power of movie actors. Though its participants take HSX seriously, the stock market simulator has been designed as a game — a game based on Web and database technology that needs to support 40,000 active traders, 40,000 logons per day and 250 million shares traded each day.

HSX seeds new players with $2 million "Hollywood dollars," the play money that serves as the simulator's currency. As with any stock market, the concept is to increase that bankroll. Stock prices rise on anticipation of a lucrative box office or actual receipts over the first four weeks of a movie's release.

HSX relies on an Informix database that runs on a Sun Microsystems ES450 server driven by four 300-MHz processors. The database stores player and stock information. Netscape Enterprise Server handles Web serving while NetDynamics software plays middleman to enable communication between the database and Web server. The Netscape and NetDynamics software runs concurrently on a Sun UltraSPARC-II server powered by two 300-MHz processors.

With that mix of wares, HSX enables players to view their portfolios, track stock prices in real time, and place buy and sell orders — and for the most part, the procedures have been automated by the exchange. In place of trading-floor brokers, for instance, HSX utilizes a "Virtual Specialist" to process trades. According to Nalin Patel, chief technologist for HSX, the Virtual Specialist is based on database-stored procedure technology that can fulfill trades every two minutes. The Virtual Specialist is also the element of the game that alters the price of each stock, according to supply and demand, causing the market to ebb and flow similar to its real-life counterparts.

Activity on the site gets pretty heated and strains the HSX network. While there have been crashes — quite different from the stock market crashes of late — the HSX system has been fairly reliable. Patel reveals that one crash surprisingly wasn't due to the lack of hardware or scalability, but rather, resulted from a configuration problem. HSX may revert back to an earlier version of Enterprise Server to ensure the Web site's stability, he says.

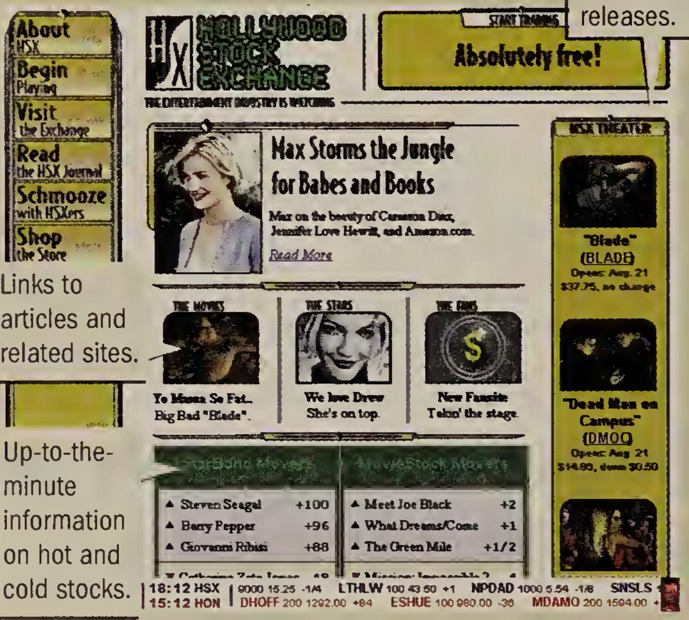
To alleviate growth-related glitches and to keep the site moving forward, HSX is updating its Web site, Patel says. On Sept. 15, a new interface will be introduced, but the key upgrades are slated for completion by Nov. 15. According to Patel, they'll include the addition of another ES450 server to house an upgraded edition of the NetDynamics software. This will put each main server software component — the Web server, the database and the NetDynamics apps server — on a separate machine in order to ensure more efficient processing.

The improvements will also enable the addition of new features, such as the shorting of stocks, so users can trade on issues that are seen as overpriced and expected to drop. The Virtual Specialist will change from database-stored procedures to in-house-developed Java logic that communicates with the NetDynamics server. Patel says the use of Java enables easier maintenance and modification as well as better scalability.

In the future, it's expected that the few HSX tasks requiring human intervention, such as the acquisition of weekend box-office receipts, will be automated. ■

TAKING STOCK

Next week, the Hollywood Stock Exchange unveils a new look for its home page.



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Java-based ticker.

'NET INSIDER

Standards as weapons

There was something wrong with the picture.

Some reports from the recent International Forum on the White Paper (IFWP) meeting in Singapore said that people were plotting to put the IETF under the control of the "new Internet Assigned Numbers Authority (IANA)" organization.

This would be somewhat like a random third party telling Greenpeace that the environmental organization was now to operate under the control of the whaling industry association. Things could get sticky if the people defining the new IANA actually thought they had such power.

For those of you who have not been paying attention, the IFWP (www.ifwp.org) has been holding meetings around the world to try to come up with an organization to implement the recommendations in the U.S. government's white paper on the management of some key Internet infrastructure functions (www.ntia.doc.gov/ntiahome/domainname/domainhome.htm). At the same time, the IANA — the organization that has been performing these functions since the start of the Internet itself — has been soliciting comments on a series of organizational plans for the new IANA. In addition, the IANA has been trying to integrate IFWP comments and suggestions (www.iana.org).

At this time, it looks as if these two efforts may come together. But this column is not about the effort to define a new IANA. Rather, it is about a dream of control by some people who fear the open standards development process as exemplified by the IETF (www.ietf.org).

The IETF is an international, independent, self-defining standards development organization that has allied itself with the Internet Society (www.isoc.org). The IETF's relationship with the current IANA is one where the latter provides database maintenance and number assignment functions. The IANA keeps the lists of the protocol numbers and identification strings that have been defined by IETF standards. The IANA does not tell the IETF what to do other than to request clarity in any procedures the IETF defines to be used in assigning protocol numbers and strings. The white paper proposes that this relationship between the IETF and the new IANA organization continue.

Scott Bradner

But it is hardly a surprise that outsiders would like to control the IETF. The standards that have been developed by the IETF and other organizations, such as the World Wide Web Consortium, have created the Internet as it is today. IETF standards have caused major disruptions in many areas — particularly in the traditional telecommunications industry — while at the same time challenging the ability of governments to control the information their citizens see.

For the last few years, a number of governments, mostly in Europe, have been trying to figure out how to "govern the technology," as one observer put it. Governments and individual companies have a significant voice in many "traditional" standards bodies but have no specific voice in the IETF. Individuals are welcome to speak their mind, but there is no specific governmental or company-based influence over the management or technology evaluation in the self-funded IETF.

When governments and organizations see their plans disrupted, it is natural for them to want to push back and blunt the disruption. Now they are trying again, but I predict they'll be unsuccessful.

Disclaimer: After more than 360 years, Harvard is used to the concept of disruptions. But the above is my prediction.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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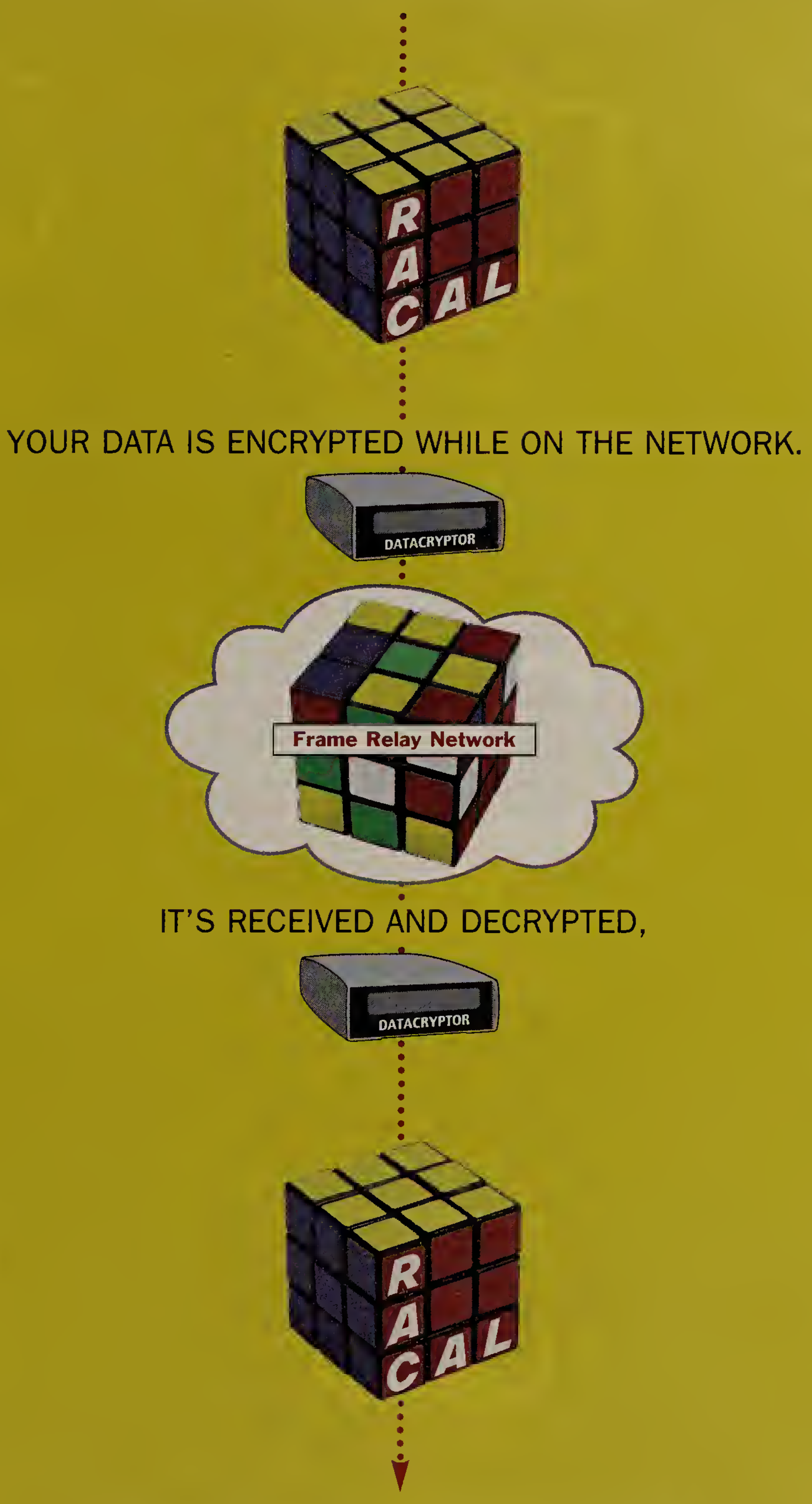

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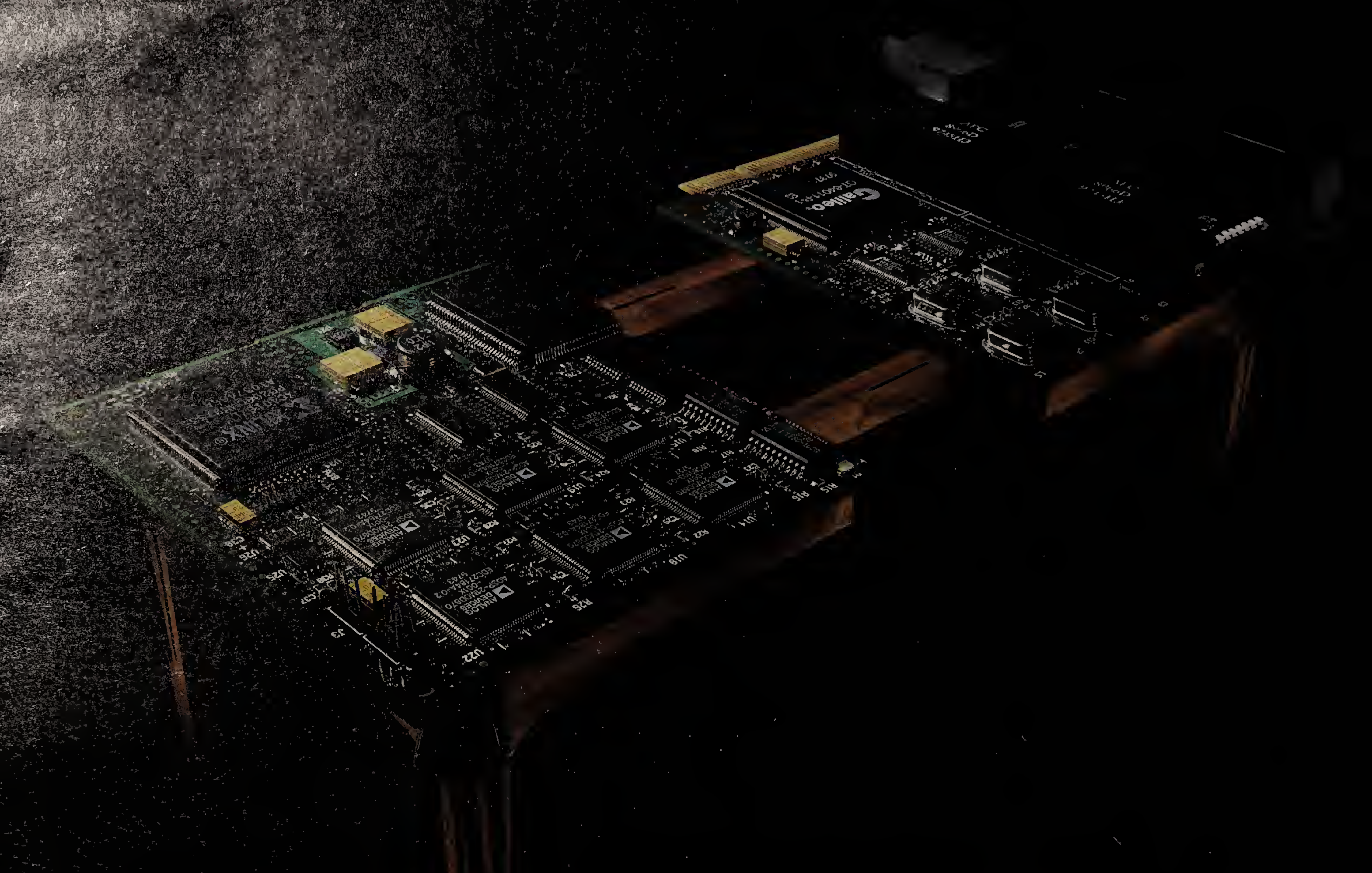

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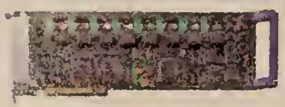

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Technology Update

Covering: Evolving Technologies and Standards

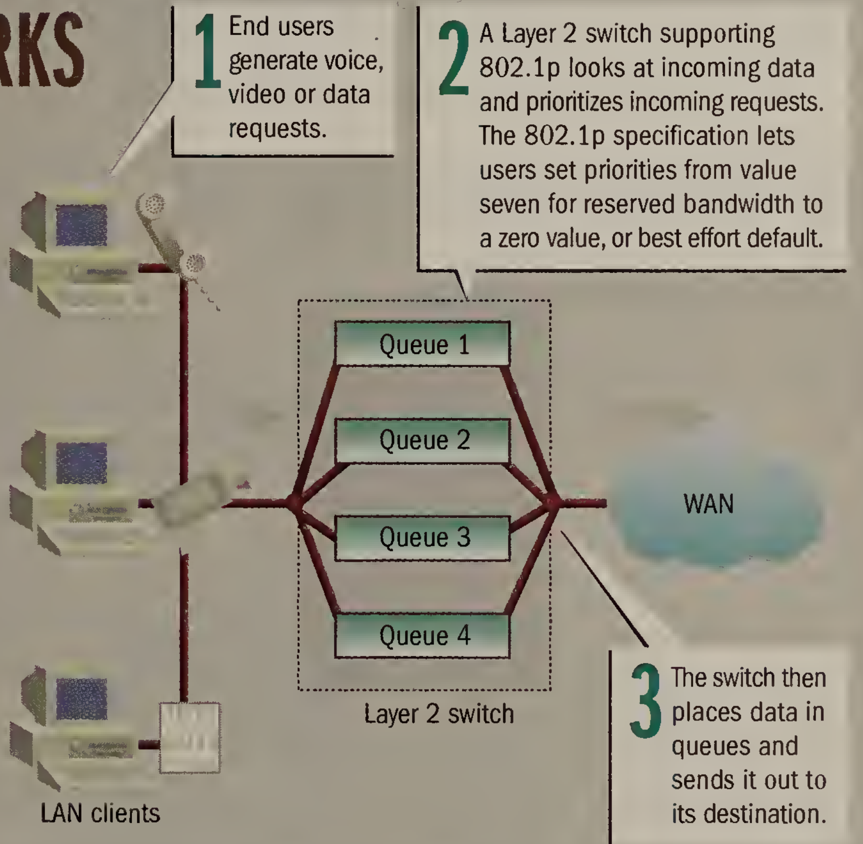
Tackling the p's and q's of LAN traffic

By Doug Sherman

HOW IT WORKS

The 802.1p traffic prioritization specification

The 802.1p specification gives Layer 2 switches the ability to prioritize voice, video and data traffic. The specification will let users set priorities for up to eight classes of traffic. The idea is to guarantee the timely delivery of all types of data.



1 End users generate voice, video or data requests.

2 A Layer 2 switch supporting 802.1p looks at incoming data and prioritizes incoming requests. The 802.1p specification lets users set priorities from value seven for reserved bandwidth to a zero value, or best effort default.

3 The switch then places data in queues and sends it out to its destination.

Thanks to the IEEE's recent ratification of 802.1p as part of a newly revised 802.1D bridging standard, LAN switching has taken a step forward in the move toward supporting the convergence of voice, video and data.

802.1p is a specification for giving Layer 2 switches the ability to prioritize traffic and perform dynamic multicast filtering. Both are valuable for improving LAN performance, but prioritization is expected to have a more immediate impact.

The prioritization specification works at the media access control (MAC) framing layer of the Open Systems Interconnect model. To be compliant with 802.1p, Layer 2 switches must be capable of grouping incoming LAN packets into separate traffic classes.

Eight classes are defined by 802.1p. Although network managers must determine actual mappings, IEEE has made broad recommendations. The highest priority is seven, which might go to network-critical traffic such as Routing Information Protocol and Open Shortest Path First table updates.

Values five and six might be for delay-sensitive applications such as interactive video and voice. Data classes four through one range from controlled-load applications such as streaming multimedia and business-critical traffic — carrying SAP data, for instance — down to "loss eligible" traffic. The zero value is used as a best-effort default, invoked automatically when no other value has been set.

In operation, 802.1p calls for the use of priority fields within the packet to signal the switch of the priority-handling requirements.

Unlike other 802-defined protocols such as FDDI and token ring, Ethernet does not carry defined priority fields. To address this, 802.1p is able to reference the priority fields contained in a tag header being developed by the IEEE's 802.1Q working group, which is focusing on virtual LAN identification.

The 802.1Q specification defines a tag header consisting of 32 bits, all inserted after the packet header's normal Destination and Source addresses. Of these, three priority bits are used for signaling 802.1p switches, a single bit identifies optional token-ring encapsulation, a 12-bit virtual LAN ID applies to virtual LAN membership, and 16 bits are used to modify the "Ether Type" frame.

The 802.1Q priority bits may be set by desktop systems, servers, routers or Layer 3 switches. In desktops and servers, 802.1p-compliant network interface cards set the bits by monitoring port and socket IDs to determine traffic priorities.

Routers and Layer 3 switches are able to differentiate among traffic priorities by inspecting packet payload information such as port number and service address. They use this information, coupled with network administrator-defined policies to classify any untagged packets.

As for Layer 2 switches, which can't "see" above the MAC layer, the 802.1p specification will give them the ability to recognize the packet priorities.

In order to act on traffic priorities, however, newer routers and switches will have to be capable of employing multiple buffer queues for each output port.

In a conventional single-buffer switch, when congestion occurs, all packets must wait their turn to move on. By contrast, a switch with multiqueue hardware can give higher priority packets fast handling inside the switch; some will actually overtake lower priority packets in the few milliseconds required to move through the switch.

The 802.1p specification anticipates multiqueue hardware by recommending how the eight traffic classes should be assigned in systems with two, three, four or more queues per port. Setting priority bits and implementing class-based forwarding are significant steps toward multimedia convergence and policy-enabled networking.

What's needed next will be directory-enabled networks that can provide for automated network configurations based on network manager-defined policies. For some, a valuable next step may also involve extending packet priorities through the WAN.

This may be performed through some interaction with the quality-of-service capabilities of ATM, or, in the case of IP packet networks, the Type of Service (TOS) subfields. TOS subfields were defined for IPv4 networks by the Internet Engineering Task Force in 1981 and are now undergoing a thorough redesign by the IETF Differentiated Services working group called Diff-Serv.

But for now, these technologies are in the earliest stages of proposal. What is real is the gathering momentum toward convergence in the LAN, strengthened considerably by the recent ratification of 802.1p.

Sherman is program manager in 3Com's technical marketing group. He can be reached at Doug_Sherman@nww.com.

NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Microsoft Certified Systems Engineer in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 7476, or send your questions to helpdesk@networkref.com.

For a security audit of one of our Novell NetWare LANs, our department requested a security evaluation utility report from the security.exe utility. The report, titled "Security Evaluation Utility Version 2.23," shows the user's logon and full name and a line for each user that states "has no LOGIN_CONTROL property."

We cannot find what that line means or its implications. In one NetWare security book, a sample report showed a line stating "has no login script," but we doubt the "no LOGIN_CONTROL property" statement is the same as having no login script. Do you have any idea what this means? We're running NetWare 4.1, but from our research, it appears the security.exe is a NetWare 3.X utility.

Via the Internet

You have the option with NetWare 3.X to restrict logon based on workstation address; with NetWare 4.X, you can restrict logon down to the network protocol level. I ran an exhaustive check of Novell's technical support Web site, at http://support.novell.com, and wasn't able to find any specific references to your query.

You have options with NetWare 4.X. You can use Novell's Auditcon or a third-party utility. Auditcon has proven to be more useful than its 3.X counterpart because Novell provides more detailed information with it. Auditcon allows a nonsupervisor to access details about the security setup. This configuration is needed in organizations that are required to have independent verification of the security setup of their networks.

Bindview Development's Bindview EMS/NOSadmin for NetWare 4 is an excellent third-party utility. You can find the utility, which comes in NetWare and NT versions, at www.bindview.com.

EDITORIAL *insights*

The ISPs rise to the occasion, with a twist

Well, it was bound to happen. One of the network industry's top vendors has declined — yes, declined — to take part in the ISP Showdown that *Network World* will be staging at Fall Internet World 98. In August, I challenged six of the leading business-oriented ISPs to take part in a special presidential-style debate moderated by me at the conference in New York. WorldCom, PSINet, GTE Internetworking and AT&T WorldNet all quickly agreed. The soon-to-be combined MCI/Cable & Wireless Internet operation has also expressed interest in taking part, but won't be able to give me a speaker name until the merger is completed. (Yes, I'll wait.)

But IBM Global Services declined. However, that's not surprising in light of the news that surfaced last week that IBM is attempting to sell off its Global Network operation (although IBM has been fairly quiet on the plan).

We have a terrific lineup of speakers for this showdown. PSINet is sending CEO Bill Schrader, GTE Internetworking has offered up Chief Technology Officer John Curran, AT&T Vice President Kathleen Earley has committed to the event, and WorldCom is sending UUNET Vice President of Marketing Alan Taffel.

The ISP executives will first field questions from a panel that includes *Network World* Senior Editor Denise Pappalardo; Greg Howard, director of service provider programs with market researcher Infonetics; and Johna Till Johnson, director of META Group's Global Networking Strategies Service.

After the experts have their fill, our vendor panelists will ask each other questions. Finally, the audience will get to grill the suppliers. There are no formal presentations, and there's a strict time limit on answers. The format is designed to cut down on marketing blather and help clarify vendor strategies.

If you're going to the Internet World, mark the showdown on your calendar. It will run from 2:30 p.m. to 4 p.m. on Monday, Oct. 5, at the Jacob K. Javits Convention Center. If you're not going, you ought to reconsider; this is going to be fun.

Now that we have this lineup of top-notch speakers, only one chore remains for me before the event — getting your input. What do you want us to ask these leading ISPs while we have them up on stage? What puzzles you about virtual private networks or service-level agreements or other Internet access issues? Drop me an e-mail, and I'll make sure your voice is heard.

John Gallant, editor in chief jgallant@nww.com

Network management • Richard Ptak

The rocky marriage of SLAs and VPNs

Your business unit clients keep calling on you to create service-level agreements (SLA) that directly link IT activities to their business process success. At the same time, you are looking into using a virtual private network (VPN) to rein in exploding data communications costs. These two situations may seem unrelated, but, as in life, nothing in IT ever happens in a vacuum.

VPNs let the enterprise connect distributed resources, such as remote users, servers, desktops and databases, using relatively low-cost Internet services rather than expensive dedicated long-distance telephone lines. They differ from extranets in that they assume a higher level of access security, mandate encryption of transferred data and usually, but not always, focus on limiting employee access to the resources and data on the network.

VPNs affect business unit SLAs when the service that the business unit wants managed is dependent on the VPN. Unfortunately, you have no direct control over the VPN. How can you write, negotiate or even consider committing to an SLA in the face of the risk of failure attributable to infrastructure problems beyond your immediate influence?

The first requirement is to understand what your ISP currently offers in terms of SLAs. In general, most of today's VPN providers will offer a guarantee of a certain level of network availability. Typically, it will permit outages for various amounts of time per day before remedies take effect. The remedies commonly take the form of specific refunds or service credits — which, while nice, are no help when your clients require commitments in terms of service response time or application performance.

Currently, no VPN provider is willing to offer end-to-end latency, performance or response-time guarantees, and for good reasons. They include lack of visibility and control across ISP service boundaries; IP's lack of quality-of-service capabilities; lack of information about carrier backbone performance and control over the carrier backbone; and lack of control over client portions of the service, where server and processor size can seriously impact handling times.

Solving these problems requires a level of cooperation, partnership and confidence among competing service providers that is just beginning to be recognized, let alone negotiated and implemented. Therefore, for VPN-dependent services, you can't reasonably write end-to-end performance-type statements into your business units' SLAs.

However, all is not lost. If you are willing to incur some risk, customize some management software and are able to wrangle some concessions out of your ISP, you can write and offer service availability statements.

Today's ISP availability SLAs are based on reporting status — that is, whether the link to the ISP is up or down. You really need event notification when something happens in the ISP's network that affects the VPN's availability, performance or accessibility. While you can monitor your side of the connection for problems, you generally cannot tell if your ISP is having problems shuttling data to the carrier backbone. It is vital to get such information in order to manage your business unit SLAs proactively.

Once received, these events can be processed by your service management system to display those services that are affected, and notifications can be sent to the appropriate business units. This way, you can be more responsive to your customers' needs and — better yet — leave the problem resolution to someone else.

This level of end-to-end monitoring and reporting still represents a major challenge within an enterprise, let alone between enterprises. Hope springs eternal, but it is only by visualizing and demanding increased service that progress will be made. You now know what to request.

Ptak is vice president of systems management research for D.H. Brown Associates, an industry research and consulting firm in Port Chester, N.Y. He can be reached at rlptak@dhbrown.com.

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification

Subsidizing spam

Regarding Mark Gibbs' column "Making spam work for us" (Aug. 17, page 53):

When I get junk mail via snail mail, no big deal. So what's the difference with spam? Regular junk mail costs the mailer his time and money. That's his risk for cold-calling me. With spam, it costs me money, which is what I resent most. It forces my ISP to have the disk space and system constraints to handle the extra volume. And it costs me my time to wade through and delete all that junk.

If spammers want to be legit-

Reality Check • Thomas Nolle

What's really behind the Ascend and Cisco deals

On the surface, the news seems simple. Ascend buys Stratus. Cisco buys Summa Four. IP giants battle for positioning in the holy war of convergence, or voice over IP, or whatever. But nothing is what it seems to be on the surface these days.

Look at two other news stories. Lucent gets orders from regional Bell operating company SBC and competitive local exchange carrier (CLEC) Dakota Telcom for billions of dollars worth of 5ESS switches. If we're converging on a new IP-based voice infrastructure, the old technology is sure getting a heck of a send-off.

Now it's possible that Cisco and Ascend planners have their heads in the converging clouds, so to speak, and have missed the other news stories. It's also possible that the first two news items were really caused by the second two. If Class 5 voice switches are still worth billions, maybe IP players need to get into that market. (Note, I'm not saying, "Replace that market with IP," but rather "get into that market.")

There's an architecture — a set of standards — that Cisco and Ascend could use to threaten Lucent and Nortel (not to mention Siemens, Ericsson and others) in the Class 5 switch market. It's called advanced intelligent network (AIN).

AIN is a Bellcore initiative to restructure the way voice telephony works to make it look more like client/server computing. In traditional voice networks, all service features had to be programmed into the big central office edge switches, or Class 5 switches. The software was so complex that features were planned two years in advance, and the cost of the devices kept mounting. AIN is targeted at fixing that problem. In an AIN, service intelligence is distributed among service control points (SCP), service switching points (SSP) and intelligent peripherals. These smart gadgets are linked in a control network using signal transfer points (STP). What runs that control network? Signaling System 7 (SS7). What's the common thread in the Cisco/Summa Four and Ascend/Stratus deals? SS7. Summa Four is big in the intelligent peripherals market; Stratus is big in intelligent peripherals and STPs. Get the picture?

If AIN were adopted, it would make today's Class 5 switches a distributed series of switches and computers linked via SS7. The switches would be SSPs, not much more than a dumb matrix that nearly anyone could build. All the service features — the SCPs and intelligent peripherals — would reside in the computers.

AIN was designed to make it possible to deploy new service features faster. It was also designed to reduce costs to carriers and open the market to more competition. Those are goals competitive carriers would value, yet a large local exchange carrier (SBC) and a CLEC (Dakota Telcom) just bought traditional Class 5 switches from Lucent. Could they have done so in part because no organized, AIN-like product set is available? Today even small switches are built on monolithic lines, without the concepts of distributed computing that AIN has represented for nearly a decade.

AIN could take off, though, if somebody brought the right combination of computer and switch technology together and linked it with SS7. By developing a Class 5 switch strategy based on AIN and the downsized and distributed form of telephone switching, Cisco and Ascend could target the multibillion-dollar market that today goes to Nortel or Lucent almost by default.

Why, die-hards will ask, can't these announcements of SS7 deals be viewed as a sure sign of convergence or the righteous victory of voice over IP against the heathen time-division multiplexing voice establishment? Simple: Because Class 5 switches are used mostly for local calling and feature support, and those functions don't really offer any value foothold for the data IP players. A local call is two analog loops linked at a single switch. Why move to IP to save transport costs when no transport is being consumed?

Even if convergence isn't what we could delicately call crap (which it is), it won't influence the outcome of the data communications company-vs.-telco fight. The majority of the profits Lucent reported in its recent third-quarter announcement had nothing to do with any product that would be affected in any way by convergence.

What would affect Lucent is a change in edge switching, and that's a market the data players can't easily turn into a data market. We have mouths, ears and analog phones, not RS-232 interfaces.

One thing the convergence advocates say is true: We are at a pivotal point in the evolution of the voice market. The big voice players have a revenue stream that literally dwarfs data revenue. If those voice guys get into data, which Nortel and Lucent clearly intend to do, then today's data players will be a revenue pimple by comparison — unless they can carry the battle to the telco giants' home territory — switching, not transport infrastructure.

Can Cisco and Ascend see past the convergence and voice-over-IP mumbo jumbo? Will some other player do that and ace out the kingpin data vendors and big telco players? Only time will tell.

Nolle is president of CIMI, a technology assessment firm in Voorhees, N.J. He can be reached at (609) 753-0004 or tnolle@cimicorp.com.

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imate, then they should be required to provide a real address (physical and electronic) and a phone number where they can be reached. Legitimate electronic commerce should not have to hide behind fake user IDs or bounce off innocent nodes.

Kevin Thomas
Network manager
InPro Corp.
Muskego, Wis.

Mark Gibbs notes that Microsoft uses unsolicited bulk e-mail (UBE), and then he asks if it is a respectable company. Based on my experience with Microsoft UBE, the answer is a resounding "no."

For a year or so, I have received a weekly bombardment from Microsoft Direct Access Editor. Like many UBE messages, it includes directions for removing oneself: reply and insert the word "remove" in the body of the e-mail. All very nice and standard — except you aren't removed.

I've replied with "remove" dozens of time (along with more severe commentary), but it's clear Microsoft pays no attention or doesn't care. Microsoft also claims in the message that I signed up for its UBE, which is not true. Further, it offers a Web page where you can "manage your subscription" or verbiage to that effect, but for now, it's quicker to just delete the messages.

Jedd Haas
Owner
EPS, Inc.
New Orleans

We need to acknowledge that unsolicited e-mail is merely a twist on another theme. There are several accepted "unsolicited requests for attention" (URFA), including bulk mail, cold phone calls and door-to-door sales.

The reality is that companies have a product or service of value to customers. From a business standpoint, it is unwise to expect all customers to research and discover your product or service on their own. It is much wiser to find potential customers yourself. The only person who knows for sure if a product or service will benefit him is the potential customer. As the sales organization, the only way to find out is to ask.

I hate spam as much as anyone. I also have a delete button, much as I have a trash can for bulk mail. I keep my switchhook handy for cold calls. Occasionally, I find some products that fit my organization, and I buy them. I would have never known about them unless the other company engaged in URFA.

What scares me the most is some individuals' insistence that Uncle Sam fix the problem. We have too many self-declared victims in our society, demanding that our already too-far-reaching government save them from some perceived evil. Is this the worst transgression they experience?

Marty Scholes
Data processing manager
Output Services, Inc.
Boulder, Colo.

Teletoons

I thought I messaged you guys yesterday about this - no playing networked computer games during regular business hours!!
Phil Frank
Phil Frank and Joe Troise baba@sfgate.com

Get more online
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Sept. 18	San Jose	San Jose Hilton & Towers
Sept. 22	Houston	Hyatt Regency Houston
Sept. 23	Dallas	Adolphus Hotel
Sept. 24	Chicago	Hyatt Regency O'Hare
Sept. 25	Minneapolis	Radisson Plaza Hotel Minneapolis
Sept. 29	New York City	Sheraton New York Hotel & Towers
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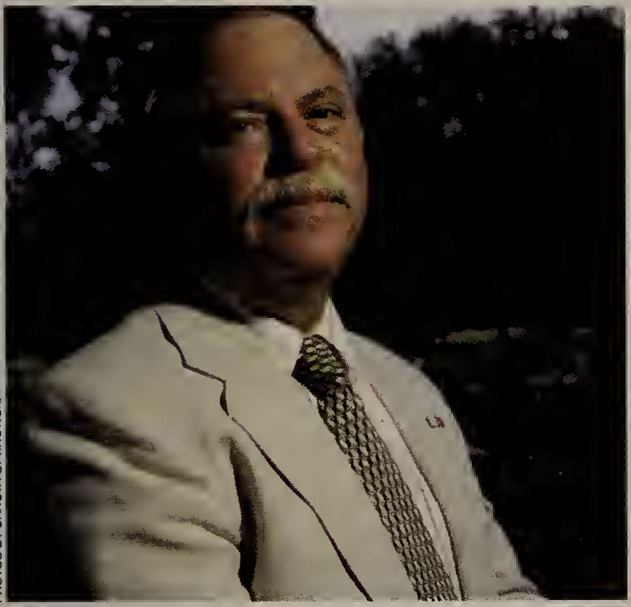
HIGH-TECH FIRMS ARE FINALLY BECOMING WISE TO THE WAYS OF WASHINGTON, BRINGING IN HIRED GUNS TO PUSH THEIR POLITICAL AGENDAS.

IT heads to the Hill

Continued from page 1

Waiting in the halls amid the uniformed soldiers is a group of lobbyists from the IT industry. The lobbyists represent vendor companies and industry trade associations that for the past few weeks have been working behind the scenes for legislation that would prohibit, temporarily at least, taxation on Internet transactions. Known as the Internet Tax Freedom Act, the bill is scheduled to go before the House Judiciary Committee this day for "markup" — a final modification before it is put before the full House for a vote.



PHOTOS BY DANUTA OTFINOWSKI

Lobbyist Bruce Hahn *of the CTIA says the IT industry is in the cross hairs of legislative activity.*

The Internet tax bill is just one of many pieces of IT-related legislation currently under consideration in our nation's capital. Microsoft and Intel are under fire from the government, while a laundry list of technology issues, including encryption, privacy, software piracy, IT training, digital copyright, Internet pornography and the looming Year 2000 crisis, is under congressional review. Policy makers are focusing on the technology industry as never before.

"Is there more IT on the agenda here today than in the past?" says Bruce Hahn, policy director of the Computing Technology Industry Association (CTIA), a Lombard, Ill.-based organization whose 7,500 members come from all tiers of the IT food chain. "Christ, yes. It's exploding. You've got the IT sector accounting for as much as 10% of the gross national product."

Key issues on the legislative schedule increasingly seem to deal with electronic commerce and IT, says Carol Cayo, a lobbyist for the Arlington, Va.-based Information Technology Association of America (ITAA), which counts Microsoft, IBM and AT&T among its members. "All the hearings are kind of related to this industry, and everyone is trying to understand what the new issues are," she says.

Timeout

Hahn and Cayo are backing the bill to stop Internet taxation. In their efforts to promote the legislation, they and a number of other lobbyists have formed a loose-knit group that calls itself the Internet Tax Fairness Coalition. In addition to IT industry organizations, the coalition is composed of major technology vendors such as America Online, Hewlett-Packard and Microsoft, and industry groups whose members might be adversely affected by taxes on Internet transactions, such as the National Retail Federation and the Securities Industry Association.

"We want a timeout," Cayo says of the coalition's objectives. "What's happening is state tax administrators have, by their own interpretation, issued tax advisories to taxpayers who have inquired whether they should collect taxes through the Internet."

As a result of the advisories, states and cities around the country have begun taxing Internet transactions using differing rules specifying what's taxable and under what conditions. "The rules vary dramatically," Cayo adds. "Companies are being told they have to serve as tax collectors for these states. It gets confusing."

"We're looking for a moratorium on state and local taxes to allow time so the government and the private sector can make recommendations regarding a future Internet tax policy," Hahn says.

Hahn, a veteran Washington lobbyist, explains that the Internet Tax Freedom Act in various forms has worked its way through several subcommittees before arriving at the Judiciary Committee. "Usually, most of the changes and horse-trading go on at the subcommittee level, and by the time it reaches the full committee, it's been completely rigged in advance," he explains.

There's been plenty of horse-trading regarding this bill. At the recommendation of the Judiciary Committee's legal council, coalition members have been meeting privately to iron out their differences with representatives from state and local governments who favor Internet taxation. As a compromise, the lobbyists agreed to allow certain states and cities that have already initiated taxes to continue taxation during the proposed moratorium. "For there to be any type of grandfathering was a major concession on our part," Cayo says.

Other trade-offs are in the works, as well. The day before the bill came before the Judiciary Committee, Sen. John McCain (R-Ariz.) told a group of IT executives that he would kill the Internet taxation bill when it reached the Senate if the group didn't support a bill that would ban pornography on the Internet. "He was very blunt," Hahn says.

At 2 p.m., Hahn, the rest of the lobbyists and several dozen lawyers, public relations and press people who have an interest in the bill file into the Judiciary Committee hearing room. The committee members and the chairman, Rep. Henry Hyde (R-Ill.), take their seats.

Quickly, the bill officially known as H.R. 3849 is introduced for markup. Just a few minutes earlier, several of the lobbyists speculated that there were going to be some last-minute changes, but after only a few minutes of discussion, the committee decides to make no further modifications. H.R. 3849 is now bound for the House floor. If passed, the bill will proceed to the Senate.

BIG SPENDERS

The computer equipment and services industry doled out $443,578 in political action committee (PAC) money to federal candidates during 1997 and 1998; $69,789 went to Democrats and $273,789 to Republicans. Here's a look at the top five contributors:

Contributor	To Democrats	To Republicans	Total
EDS	$67,800	$71,000	**$138,800**
Computer Sciences	$19,000	$42,500	**$61,500**
Microsoft	$18,000	$34,250	**$52,250**
Texas Instruments	$10,000	$22,500	**$32,500**
Intel	$5,053	$14,476	**$19,529**

The telecom business was even more generous. Carriers' PAC contributions for federal candidates totaled $3,589,508*; $1,444,538 to Democrats and $2,144,470 to Republicans. The top five contributors were:

Contributor	To Democrats	To Republicans	Total
AT&T	$287,427	$317,680	**$605,107**
Bell Atlantic	$175,752	$265,441	**$441,193**
Ameritech	$157,889	$251,203	**$409,092**
SBC Communications	$165,540	$239,401	**$404,941**
BellSouth	$127,100	$204,858	**$331,958**

* $500 to third-party candidates

SOURCE: CENTER FOR RESPONSIVE POLITICS, WASHINGTON, D.C.

Hahn is already out of his seat. "I told you this would be wired," he says of the brief proceedings. For better or worse, interested parties working behind the scenes had determined the terms of H.R. 3849 — and to a large extent, the nation's policy on Internet taxation — well before the bill ever reached the Judiciary Committee. That, Hahn explains, is how things work in Washington.

A wake-up call

A variety of factors have made IT a hot topic within the Washington Beltway. "Certainly, the antitrust actions against Microsoft and Intel have raised the visibility of the industry substantially," says Marc Pearl, the ITAA's vice president of government affairs.

IT has gained prominence among politicians because of "the perception of the importance of information technology in the booming economy," says Glee Harrah Cady, senior director of technology and public policy for Netcom and author of several books on the Internet. Once computers and software became more accessible to mainstream America, citizens began discussing IT issues with their congressional leaders, she says.

Politicians today are crafting many of the policies that will shape the future of IT, Cady says. In the process, they're directly or indirectly impacting everyone who works in the field.

"It's obvious, if you just look at the substance of the legislation that's been offered, we're in the cross hairs of a lot of what's going on in Washington," the CTIA's Hahn says. "This industry has got to recognize that pretty quickly, or we're going to be in bad shape."

For years, much of the IT sector has blown off politics as inconsequential. "Not all industry CEOs, especially in the software and Internet fields, see involvement in policy as necessarily important to their bottom line," Pearl says. "They come from an entrepreneurial milieu and view government as a necessary evil."

Today, that attitude has to change, Hahn says. IT companies need to become more proactive in policy matters on a national and regional front. Otherwise, politicians who may not know the difference between NT and an NC are going to be calling more of the shots regarding the future of American technology.

However, a good portion of the IT industry has already begun to wake up to the importance of having its influence felt in high places. A number of old-guard companies, such as IBM and HP, and the likes of AT&T and MCI, which of course have been regulated for years, have long had considerable political muscle in Washington.

More recently, the younger generation has caught on, and the industry as a whole is boosting its political spending. Computer and software firms conservatively spent nearly $20 million on lobbying efforts in 1995 and 1996, according to the Center for Responsive Politics (CRP). High-tech businesses donated $7.3 million to political candidates during the same period.

Although that sum amounts to small potatoes compared with what many industries dole out to politicians, it's about 50% more than the IT industry gave in the 1991-1992 period.

And political donations should increase markedly for the 1997-1998 period. Through the first half of 1997, for example, IBM spent a whopping $3.2 million on lobbying. Other lobbying expenditures for that same period included Electronic Data Systems' $1.1 million; Oracle's $400,000; Digital's $255,000; Sun's $200,000 and Netscape's $196,000. On the carrier side, AT&T spent $4.1 million and MCI shelled out about $1.3 million.

Among the newer IT companies, Netscape has paved the way in showing how an aggressive government affairs and public policy arm can reap benefits in Washington. Netscape CEO Jim Barksdale learned the political ropes in Washington as CEO of AT&T Wireless Services. He is a friend of several Washington heavyweights, including Senate Majority Leader Trent Lott (R-Miss.), whom Barksdale has known since their wives were in the same sorority at Ole Miss.

Carol Cayo, *a lobbyist for the ITAA, ranks the Internet Tax Freedom Act high on her agenda.*

Barksdale supports his friends in Washington with generous campaign contributions. He and his wife, Sally, each gave $5,000 to Lott's political action committee. Under Barksdale's watch, Netscape has brought aboard some top internal lobbying talent, including Peter Harter, the company's global public policy counsel.

In conjunction with several Microsoft competitors, including Sun, Netscape recently enlisted outside firepower to help further its interests in Washington. The group recruited former Senate Majority Leader Robert Dole and Jody Powell, one-time press secretary to President Jimmy Carter.

"Here is a very small company [Netscape] that has benefited tremendously over the course of the last few years by being involved in encryption, privacy and copyright issues," Pearl says. More important, if it hadn't been for Netscape loudly beating the Microsoft drum in Washington for the past few years, insiders say the government never would have initiated the current antitrust suit.

Under fire from competitors as well as the Department of Justice, Microsoft has dramatically bolstered its own lobbying efforts. Until three years ago, the vendor didn't even have a government relations office in Washington. Today, CEO Bill Gates spends almost as much time courting legislators as he does corporate customers.

"Bill Gates comes up to the Hill not just to testify, but to visit his senators, Slade Gorton [R-Wash.] and Patty Murray [D-Wash.], or other key senators," Pearl says.

Microsoft now has a number of full-time lobbyists on its payroll and works with several industry trade associations, including the Washington-based Business Software Alliance (BSA). Like Netscape, Microsoft has enlisted a number of outside lobbying and legal firms to add to its political clout.

In 1996, Microsoft signed on with the Washington D.C. lobbying firm Downey, Chandler, which is headed by former Democratic representative Tom Downey. From the Republican slate, the company hired Vin Webber, a former Republican congressman who is currently a partner at Clark & Weinstock, another Washington lobbying outfit.

Microsoft has also learned that in the nation's capital, it's necessary to give in order to receive. The company's 1996 contributions to various candidates and party committees totaled just under a quarter of a million dollars. It also gave $292,000 to Preston Gates & Ellis, the Seattle law firm in which Bill Gates' father is a partner. The firm, in turn, parceled out those funds to politicians who could be helpful to Microsoft's cause.

For example, Gorton received $10,976 from the Preston Gates & Ellis firm in 1996 and $17,050 from Microsoft's political coffers the same year. A grateful Gorton aggressively went to bat for his constituents in Redmond when Microsoft came under fire from the Justice Department. Gorton spoke out frequently about the righteousness of Microsoft's cause.

More recently, Microsoft spent $660,000 on lobbying efforts through the first six months of 1997, according to the CRP. The software giant spent another $160,000 with Preston Gates & Ellis and $50,000 through antitax activist Grover Norquist. In 1997 and early 1998, Microsoft also donated nearly $300,000 to political groups including the Republican National Committee, a $100,000 benefactor of Microsoft's largess.

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Business as usual

Today, most major IT companies have some sort of lobbying and public policy organization in place, and they are increasing their visibility in Washington. Dell, for example, established offices in Washington a little over a year ago. CEO Michael Dell made the rounds on the Hill when Congress tried to impose access charges on the Internet — a move Dell, America Online, Compaq and Digital opposed.

Despite their increased presence in Washington, many IT companies are stretched pretty thin when it comes to dealing with

Congress and the myriad agencies impacting the industry. Even Microsoft remains relatively undermanned, with only a half dozen or so full-time lobbyists working out of its new government affairs office in Washington's DuPont Circle.

Meanwhile, Novell only has one full-time lobbyist on its payroll — Dan Burton, Novell's vice president of government affairs. Burton, who handles all government relations and public policy issues for Novell, focuses, naturally, on areas of paramount importance to the network software vendor.

"The company's biggest concern is software piracy," he says. The research and development tax credit, encryption and Internet taxation are also high on his agenda. Burton is concerned that down the road the network software industry will be regulated. "As we take on functions such as transmitting data and voice, which are very similar to what the Bells do, Washington is going to be increasingly prone to regulate us," he cautions.

Burton spends much of his time dealing with Congress and the administration. "I try to get our message across to legislators or people in agencies and make it happen," he says.

He also relies on Technology Network, a lobbying group in Palo Alto, Calif., to address special issues and draws on Novell's membership in several trade associations, including the BSA, to keep him abreast of pending developments and to promote noncompany-specific issues.

Teamwork

Increasingly, too, Burton and other IT lobbyists are working in concert to support important industry initiatives.

"One of the best ways to get something done here is to put together a coalition that touches all the interests and develops common ground," he says, noting that Novell just teamed up with a dozen other vendors to obtain export licenses for products that have strong encryption.

The effort entailed close coordination among the vendors on a number of fronts, as well as the support of legislators, industry groups and other coalitions attempting to liberalize U.S. export controls on encryption.

The IT industry has experienced mixed results in using coalitions to score points in Washington. The jury remains out of the effectiveness of the Online Privacy Alliance, a group of organizations concerned that Big Brother may use the 'Net to snoop on private citizens.

On the other hand, a number of IT companies, many of them rivals such as America Online, AT&T, Bell Atlantic, MCI and Netcom, played a critical role in formulating Internet copyright legislation. "You had natural enemies, people you usually wouldn't find on the same side of an issue, and we were all able to work together successfully," Netcom's Cady says.

Despite such instances, the IT sector remains fragmented into divergent camps, a situation that prevents what has become one of America's most important industries from exercising its full clout in Washington.

"Other than the 'please don't regulate us' mantra, we're not yet together enough as an industry to go forward with some kind of coherent, overriding strategy in terms of policy," Cady says. "That's not going to change as long as we remain divided into all these different little groups."

McCartney is an editor and writer in New York. He can be reached at LatonM@aol.com.

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Monday night football

It's the Broncos vs. the Patriots tonight, and each team has a key player who won't be on the field.

By Loretta W. Prencipe

When the Denver Broncos square off against the New England Patriots tonight in the first Monday night game of the season, the names of two key players probably won't be mentioned by Frank Gifford.

In fact, few people know about the Broncos' hard-hitting Rick Schoenhals. Yet his leadership and skills helped the Broncos become the 1998 Super Bowl champions, and Schoenhals has the Super Bowl ring to prove it.

The Patriots' Paul Concannon doesn't yet have a Super Bowl ring — the Patriots were beaten by the Green Bay Packers in their 1997 bid — but he has another claim to fame: He was drafted personally by Jonathan Kraft, the team's vice president and owner's representative.

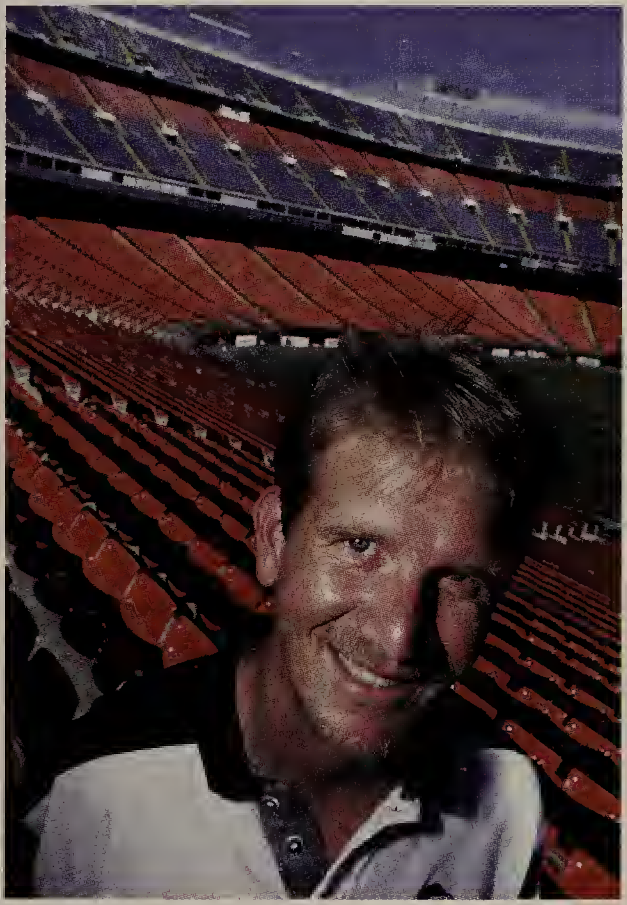
But you won't find statistics for either man in the game program or spot them on the field. Schoenhals and Concannon are IT stars — managers of information technology for their respective teams.

Even on the sidelines, Schoenhals gets a good workout on the road to victory. He runs an 80-user Windows NT network at the franchise's headquarters in Dove Valley, Colo., and the ticketing network at Mile High Stadium.

The contributions of the Broncos' administrative staff are critical to the team's success. Schoenhals' department enables coaches to efficiently and quickly analyze data to formulate plans for upcoming games, and the team scouts use software to find the best players.

Schoenhals started preparing for last January's Super Bowl game as soon as the final whistle signaled the end of the American Football Conference (AFC) championship game. The road to the Super Bowl became Job One.

About 10 days before the big game, Schoenhals sent one of his two employees to San Diego. The advance man scouted the Bronco's hotel arrangements and handled the logistics of setting up an IT base camp. Schoenhals stayed on in Denver for a few more days, handling the network breakdown and setup logistics and writing customized travel itinerary software for the team.



Rick Schoenhals, *IT manager for the Broncos, ensures everyone in the organization has the tools they need.*

STEVE ZAVODNY

The two weeks between the AFC win and Super Sunday were barely enough time to build the network. To make things even more challenging, all of the club's departments were working at full capacity and driving up network traffic.

Denver won Super Bowl XXXII, beating the Green Bay Packers 31 to 24. The team's victory was Schoenhals' victory, too. He spent Sunday night celebrating, but Monday it was back to work. He broke the whole network down and returned to Denver to start preparing for the current season.

"You can celebrate the Super Bowl win for only so long before reality sets in and it's back to work," he says.

Concannon, Schoenhals counterpart on the Patriots, didn't join the high-profile organization because of home game press-box passes. He respected the Kraft family's belief that technology and football go hand-in-hand. "The Krafts have a tremendous vision. They understand technology and what it represents," he says.

What this represents to Concannon, the man on the field, is a lot of work. With his staff of three, his network supports the Patriots, the *Patriots Football Weekly* newspaper, Foxboro Stadium and The New England Revolution, a soccer team that plays at the stadium. In two years, Concannon took the club from 50 PCs networked through two servers to 150 PCs on five servers.

Even game day is a work day for the Patriots' IT project manager. Home games mean Concannon must set up hardware, mostly laptops provided by the National Football League (NFL) that are used to keep the official stats. He also maintains the Patriots' NFL Net server, which is a Microsoft Exchange e-mail system the NFL uses to distribute game statistics to all its teams.

"During the game, I'm the on-call support, so to speak," Concannon says. He constantly monitors the NFL Net from the press box. If the system goes down, Concannon must get it back up. "So far, it's just been a kicked out cable or a printer problem," he says.

Perhaps not realizing he puts in long hours year-round, some of Concannon's friends are envious that he sees players like Drew Bledsoe and Ben Coates at the office. "When I first met them, I couldn't believe it. But that wore off. I got tied up in day-to-day responsibilities. Now I just kind of blow right by them," he says.

It's no different for Schoenhals. He still enjoys using his complimentary mid-field season tickets, but saying good morning to John Elway isn't the big thrill it once was.

But the excitement of working for a high-profile football team isn't completely gone. Schoenhals received his Super Bowl ring during a posh celebration, then wore the ring to his parents' 40th wedding anniversary party. "It was a big hit. My family thought it was great," he says.

Prencipe is a freelance writer and attorney in Springfield, Va. She can be reached at LWPrencipe@mailexcite.com.

May the best team win

They're not Las Vegas oddsmakers, but we asked the network managers for the Denver Broncos and New England Patriots to give us their predictions on tonight's game.

The prediction of Paul Concannon, project manager of IT for the Patriots, should come as no surprise. "The Patriots are going to come out on top 34-10," he says.

Rick Schoenhals, a Denver native and IT manager for the Broncos, begs to differ. "We are going to run away with this. We have great success against New England," he says.

MORE ONLINE

○ Information about the Broncos and Patriots.

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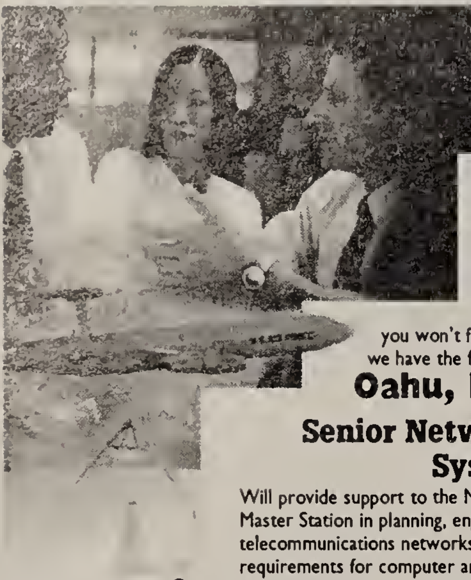

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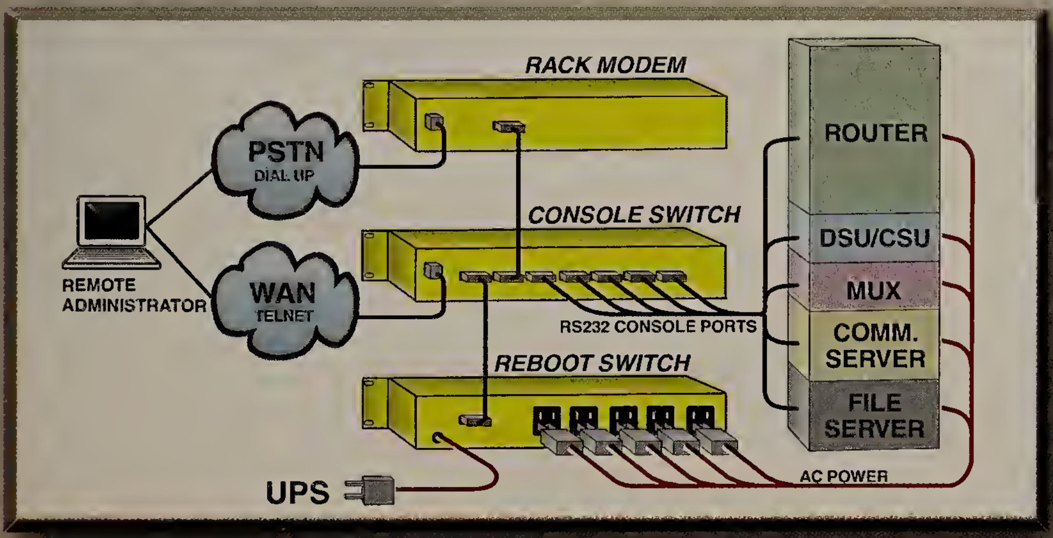

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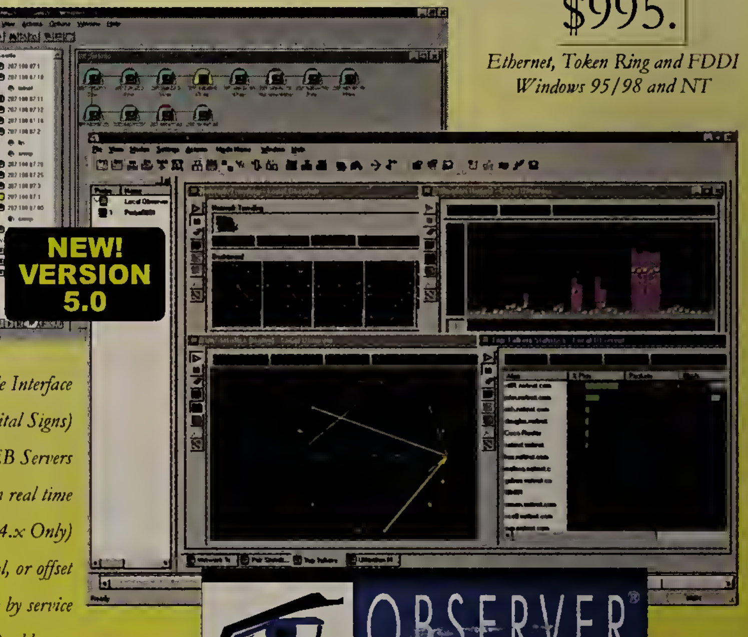

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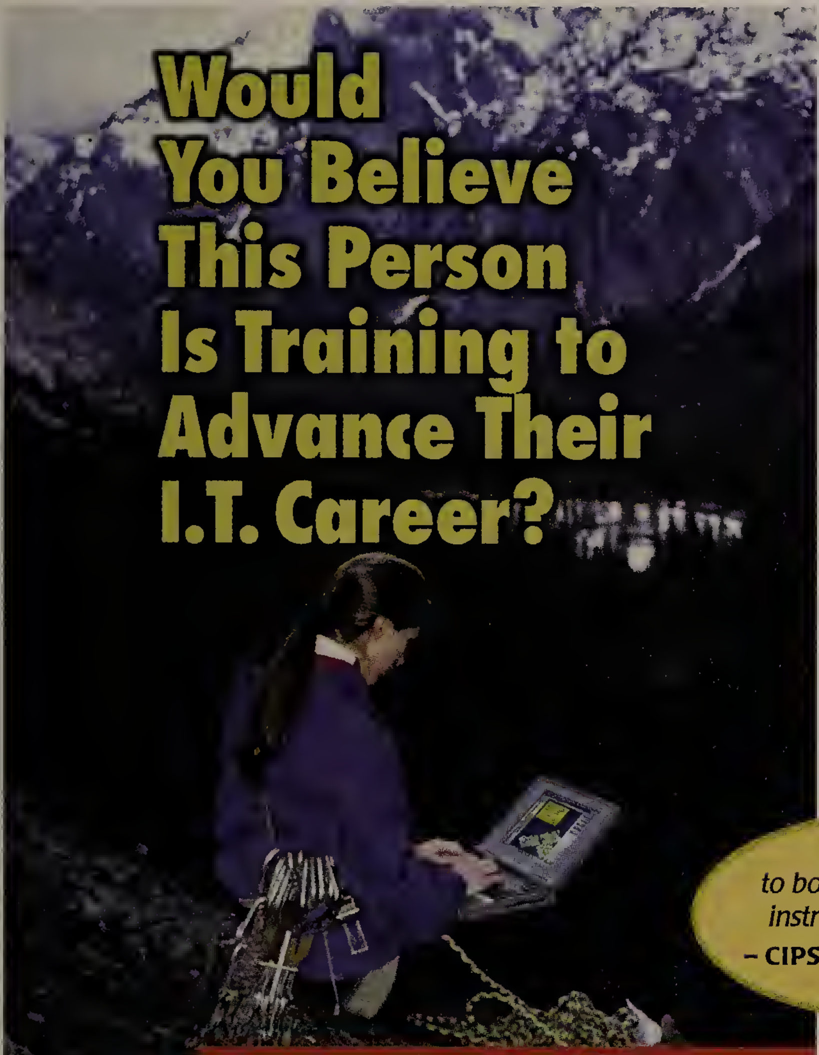

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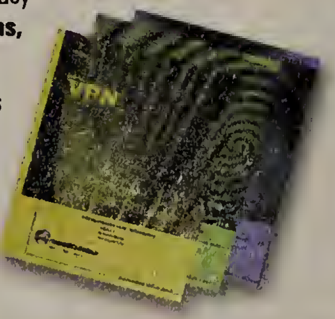

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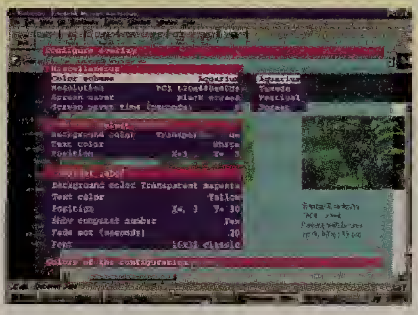

On-screen display menu–This screen shows the overlay menu with the selection for the color scheme popped up.

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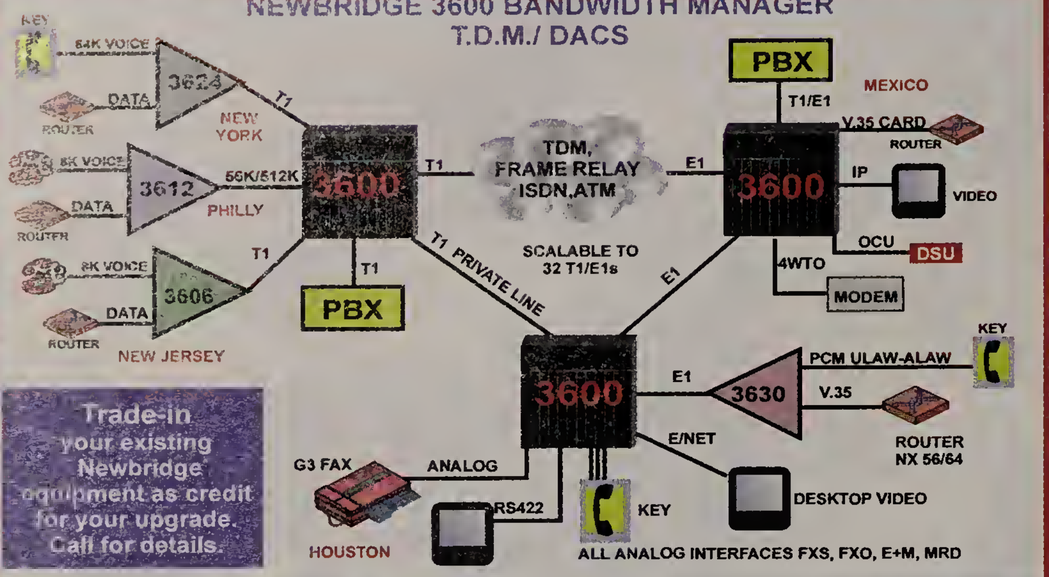

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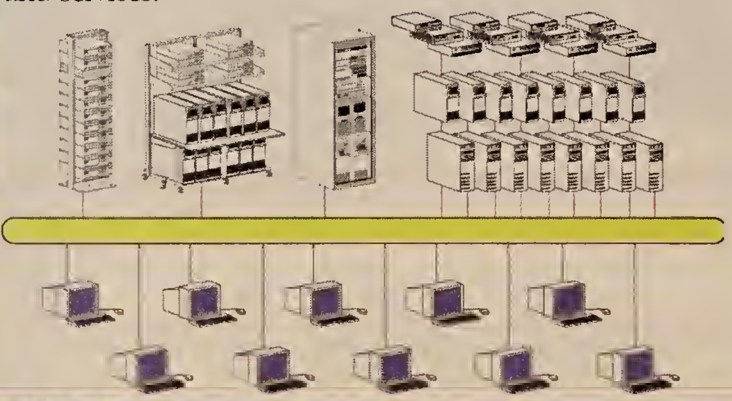

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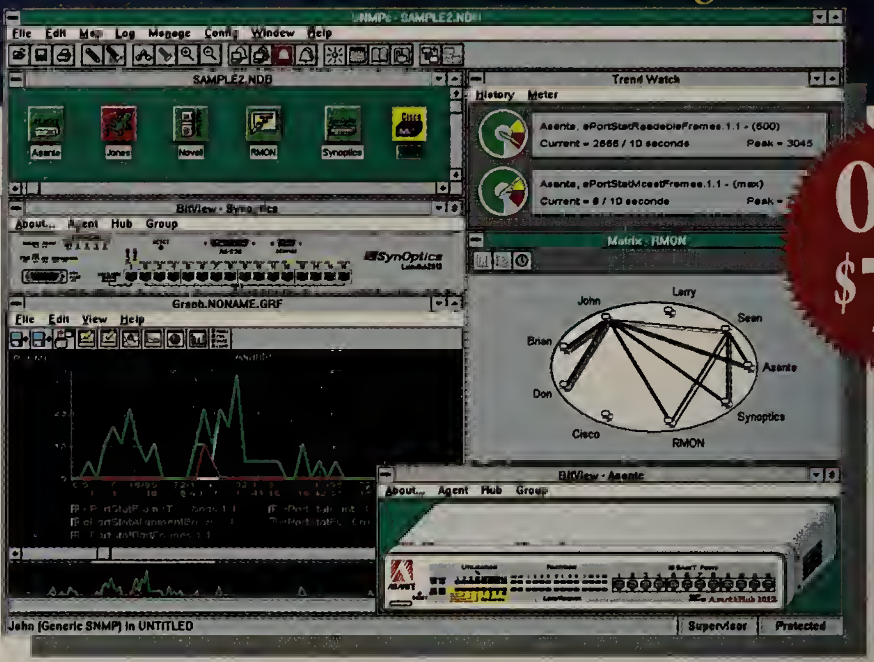

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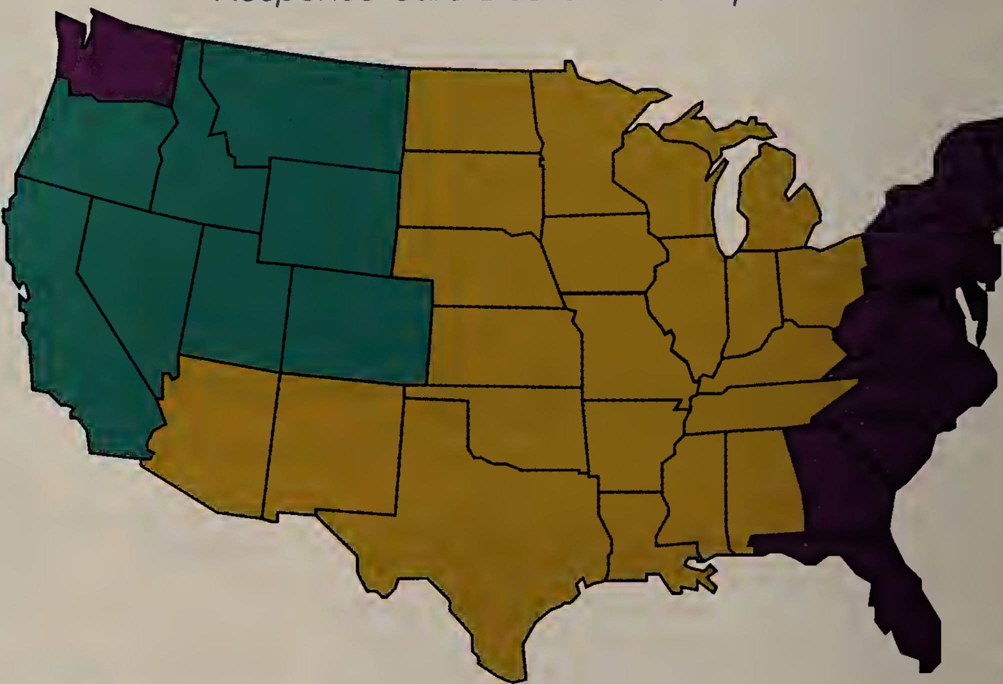

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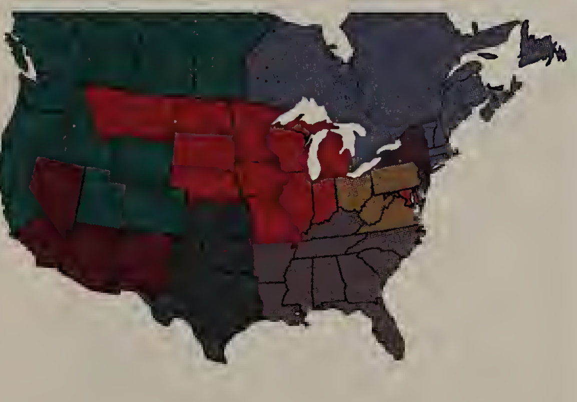

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‘For Sale’ sign goes up on IBM’s Global Network

By Denise Pappalardo

IBM is looking to get out of the day-to-day business of running its Global Network.

Sources indicate the company hopes to make $3 billion to $4 billion by selling its international IBM Global Network and leasing the network from the buyer, which will likely be a telephone company. Sources emphasize that IBM only hopes to be rid of the burden of overseeing the network’s daily operation so that it can focus on building remote access and electronic transaction services.

The IBM Global Network provides some 45,000 SNA, frame relay and IP service customers with dedicated and dial-up access service from 900 cities and 100 countries. It also offers individual users local dial-up Internet access at 1,350 locations spread across 53 countries.

The network is the backbone for many of IBM’s internal communication channels as well as the pipeline through which the company supports all its IBM Global Service offerings to customers worldwide.

But the core of the network is aging, says Eric Paulak, an analyst at Gartner Group, a Stamford, Conn., consulting firm. While IBM could easily upgrade its network to a level that would put it on par with Qwest Communications’ mega-bandwidth network, IBM would have to invest billions of dollars. “And IBM is not interested in doing that,” Paulak says.

Besides, IBM is better off being free of the $200 million it costs annually to maintain the Global Network, experts say.

One source says IBM will not be selling the Global Network to just any old service provider that can cough up the dough, however. IBM will need to work closely with any buyer, so Big Blue is going to try to ensure an amiable, noncompetitive relationship.

Paulak says IBM’s pickiness and the current regulatory environment immediately eliminate some players. While local exchange carriers are all potential candidates, BellSouth, which has an ongoing relationship with EDS, and Bell Atlantic, which has its Bell Atlantic Network Integration division, would get pushed to the bottom of the list for competitive reasons, Paulak says.

Because the IBM Global Network spans more than 100 countries, any deal would need the approval of the European Commission (EC) as well as domestic regulatory bodies. These approval requirements could eliminate WorldCom/MCI and probably Cable & Wireless, because the latter could own MCI’s Internet backbone as early as this week. The EC would most likely not approve either buyer.

Likely candidates are the next-generation telcos, Paulak says. Qwest and Level 3, which have no customers or expanded value-added services to speak of, may win out. IBM is likely to feel comfortable from a competitive standpoint, and these companies should have no regulatory problems either, he says.

But IBM should expect many bids for its network. “The IBM Global Network is a bargain at $3 billion to $4 billion,” he says.

IBM makes about $2 billion annually from its IBM Global Services division, Paulak explains.

Rob Guth of IDG News Service contributed to this story.

IBM Global Network’s story

About 45,000 customers ride the IBM Global Network, which has had several faces over the years.

1982
IBM formed the IBM Information Network to support SNA services.

1992
IBM partnered with Sears to form Advantis.

1994
IBM transformed Advantis into the IBM Global Network.

1997
The IBM Global Network is brought under the same umbrella as IBM Global Services.

Cisco

Continued from page 1

example, will make it possible for network managers to control how IOS services are delivered to individuals or groups of users. An administrator could use Active Directory to define how much bandwidth individual users could get to run multimedia applications.

But large-scale shops with Novell and Cisco gear are angry that Cisco is shunning NDS. They argue that NDS, with its 40 million installed seats, deserves as much, if not more, attention as Active Directory. Microsoft’s directory is not expected to hit the streets until the middle of next year.

“If Cisco does not support NDS, I will buy something else,” says Larry Bradley, a network manager at Georgetown University School of Business in Washington, D.C. “I am already looking at Cabletron as a replacement for my Cisco equipment, and Cisco’s not supporting NDS would be the final nail in the coffin.”

Tom Ferris, a network consultant at a Washington, D.C. financial institution, agrees. He currently uses NDS to manage 60 Novell servers and 3,500 end users, and spends upward of $1 million annually on Cisco equipment.

“Few would argue that the decision to develop to Active Directory was wise but not to the preclusion of NDS,” Ferris says. “If Cisco’s competitors begin introducing NDS-enabled products, then things will start to get very interesting. If Cisco officials were smart, they would look at NDS development as an opportunity rather than a threat, which it could become.”

Ferris started a forum about native NDS support in IOS on Network World Fusion (www.nwfusion.com/forum/cisnds.html) after several queries to Cisco officials regarding native NDS support went unanswered.

Novell’s Palmeri: *Users will have to wait for DEN.*

Without native NDS support in IOS, the options for NDS-enabled management of Cisco devices are both costly and cumbersome, says Mary Petrosky, an analyst with the Salt Lake City firm The Burton Group.

Larry Giancarlo, senior vice president of Global Alliances at Cisco, says the internetworking company is investigating how to support multiple directory services to the full extent that it supports Active Directory. “But we are far from having an announceable product by any means,” he says.

In the meantime, Giancarlo says NDS will be able to manage Cisco’s products to some degree through both Cisco’s and Novell’s compliance with the Directory Enabled Network (DEN) initiative. This proposed standard is currently in development, with Cisco, Microsoft and Novell all contributing to the process.

But DEN will offer only limited management capabilities of Cisco devices while adding more complexity to customers’ networks.

These caveats anger David Gersic, a systems programmer with Northern Illinois University (NIU) in DeKalb, who manages a 52-server NetWare 4.X network with 48,000 objects contained in its NDS tree. NIU also has five core Cisco routers on an ATM backbone that includes Cisco ATM and Ethernet switches.

“When dealing with two vendors that are central to our computing environment, why should we *not* expect them to work together and support each other directly, without going through another layer of software?” Gersic asks.

Additionally, it will take at least a year for the DEN specification to make its way through the standards process, says Ron Palmeri, Novell’s director of strategic relations.

“We are dying to get ahead of that curve so that we can provide some really useful things like policy-based management, which NDS can already handle,” Palmeri says. ■

Moving toward directory-enabled network management

May 1996
Cisco and Microsoft strike a deal to link NT 5.0 Active Directory to IOS.

October 1997
Novell, Netscape and Bay announce future collaboration on policy-based network software.

November 1997
Microsoft and Cisco hold first DEN initiative meeting.

1996 1997 1998

February 1998
Vendors question Microsoft’s and Cisco’s intentions of making DEN an open standard.

August 1998
- NT 5.0 and Active Directory delivery date pushed back to mid-1999.
- Customers pressure Cisco to strike a deal with Novell about NDS.

September 1998
DEN schema specification to be handed over to DMTF.

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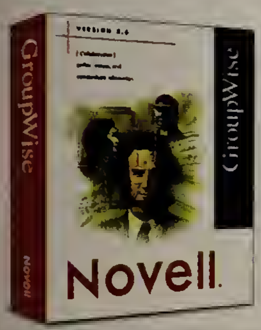
GroupWise 5.5 leaves the launch pad

By Paul McNamara
Orem, Utah

End users and network managers alike will cheer the document management enhancements built into Novell's GroupWise 5.5, according to beta testers and industry experts.

Novell last week began shipping its newest messaging and collaboration software, which had been code-named Surge. The company believes the revised product will help convince skeptics that GroupWise deserves the same consideration from customers and industry watchers as market leaders Lotus Notes and Microsoft Exchange.



GroupWise 5.5: *solid document management.*

Among the enhancements in GroupWise 5.5 are:

- Intelligent routing capabilities that determine whether the intended recipients of a document are internal GroupWise users or outsiders, with the former getting only a pointer to the document and the latter a full copy.
- A "related fields" capability that ensures repeated data, such as the identification number of a customer account, is input accurately throughout a form.
- Document echoing that lets a mobile user copy documents to a laptop, work with those documents and resynchronize with GroupWise upon returning to the office.
- Native Internet addressing that allows businesses using the messaging system to exchange data in a way that maintains encryption and full GroupWise fidelity during transport.
- Improved calendaring and scheduling capabilities, including new print views.

GroupWise 5.5 will help assure continued loyalty to the product from Novell's enormous base of NetWare users, according to Mark Salandro, director of network services for the United Food & Commercial Workers union in Washington, D.C.

Letting administrators delegate "librarian" responsibilities to certain users will enable broader, easier access to documents stored in GroupWise and lessen burdens on IT departments, Salandro says. The upgrade also boasts noteworthy performance gains and additional calendar printing options, he adds.

Salandro's experience with the GroupWise 5.5 beta provided evidence of a renewed commitment to quality at Novell, he says.

"They held the ship date until the beta testers said it was OK, which wasn't the case in earlier releases," he says. "Marketing did not tell them when to ship this."

One industry expert says he believes the combination of GroupWise 5.5 and the soon-to-be-released NetWare 5.0 will give Novell a jolt of marketplace momentum.

"GroupWise is a strong product," says Mike Comiskey, an analyst with International Data Corp. in Framingham, Mass. "Now they're working on a clearer marketing message."

Novell has not changed its prices for GroupWise 5.5, which range from $718 for a five-user license to $32,625 for a 250-user license.

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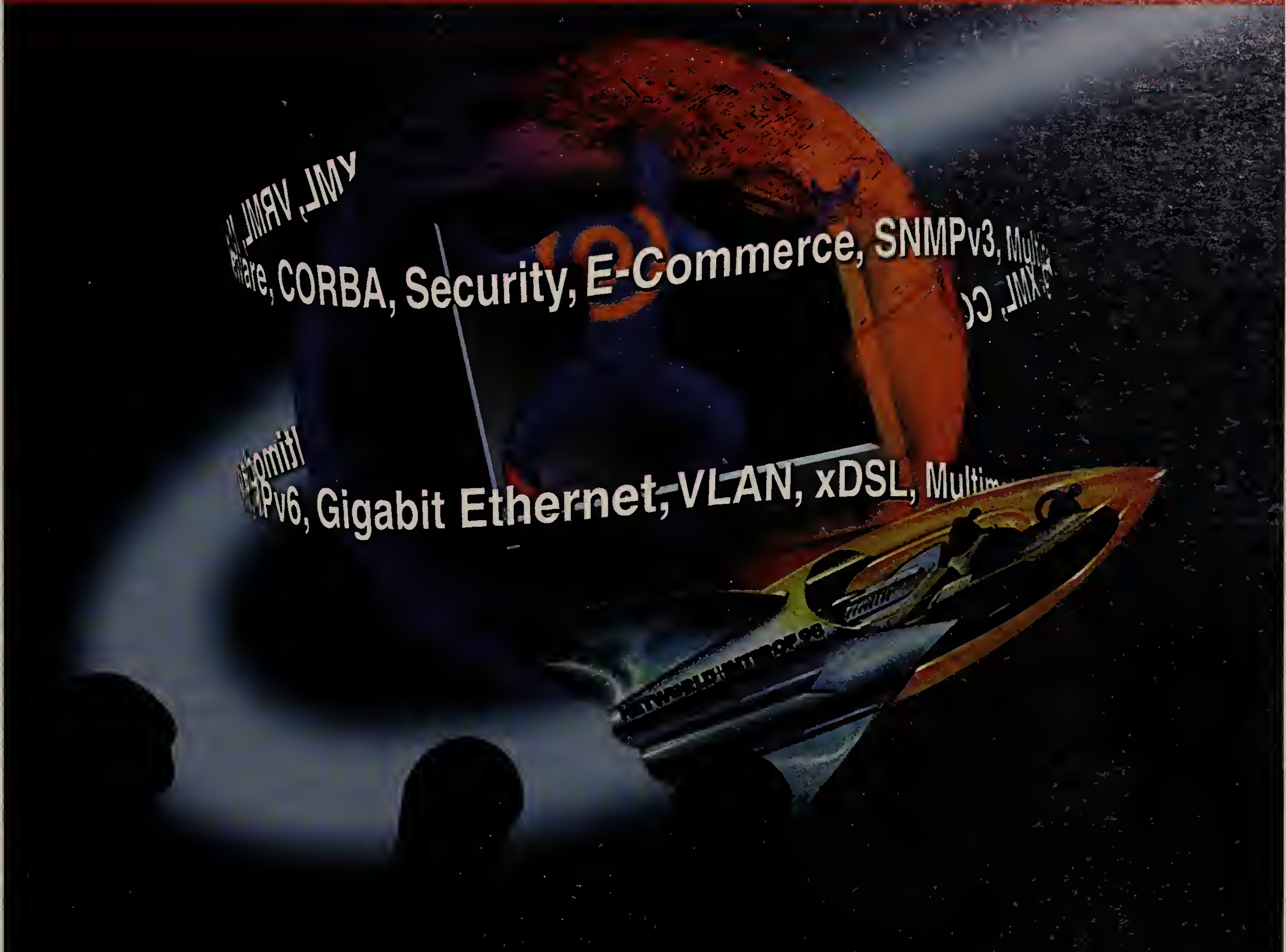
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Dell to show off 16-node cluster

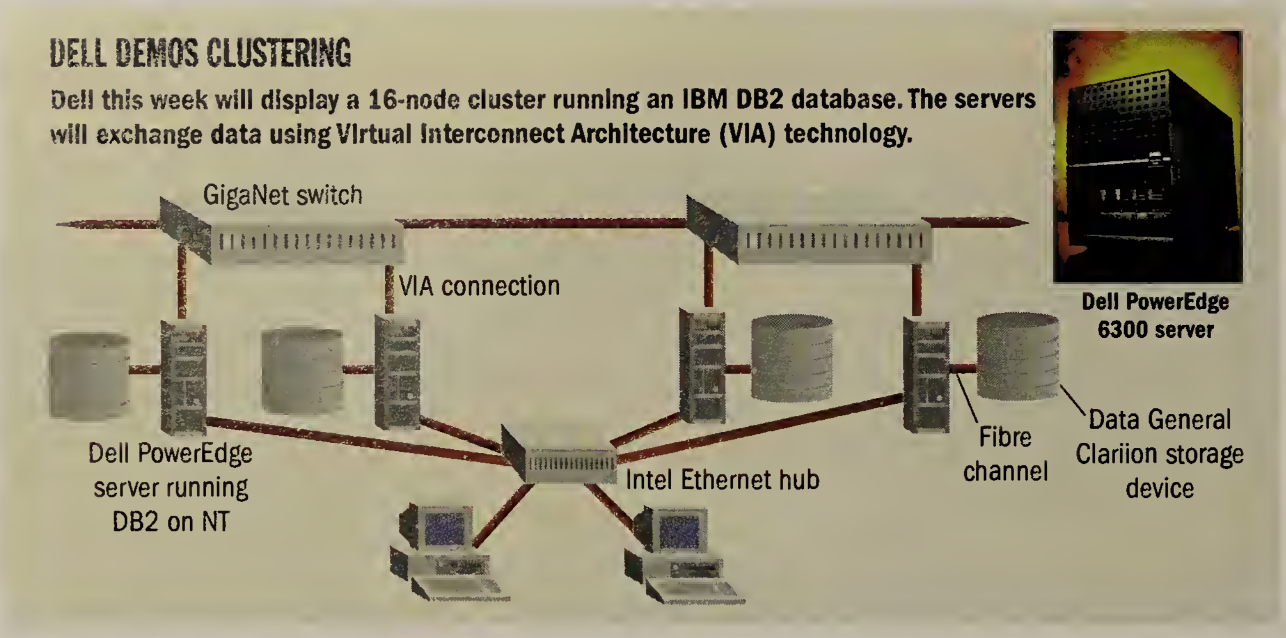
By Marc Songini
San Francisco

Dell Computer this week plans to demonstrate a 16-node Windows NT server cluster running IBM's high-end DB2 database software.

The message from Dell: Companies can deploy a mainframe- or RISC/Unix server-class database system using relatively inexpensive PC server technology — with comparable performance.

DELL DEMOS CLUSTERING

Dell this week will display a 16-node cluster running an IBM DB2 database. The servers will exchange data using Virtual Interconnect Architecture (VIA) technology.


GigaNet switch
VIA connection
Dell PowerEdge server running DB2 on NT
Intel Ethernet hub
Fibre channel
Data General Clariion storage device
Dell PowerEdge 6300 server

The demonstration, scheduled for the Comdex/Enterprise West '98 conference here, will feature 16 Dell PowerEdge servers, each powered by four 400-MHz Pentium II Xeon chips. The machines will be linked via Ethernet cabling using GigaNet network interface cards and Gigabit-speed clustering switches. The servers will team up to run IBM's DB2 Universal Database, which has been tweaked to work in this configuration.

The servers will exchange data using device drivers built by GigaNet that are based on Virtual Interconnect Architecture (VIA), a high-speed specification developed by Microsoft, Compaq and Intel. VIA reduces the number of instructions required to send data across servers.

While Dell does not plan to roll out the DB2 cluster as a bundled offering, there is nothing to prevent that from happening or to keep customers from cobbling together a similar system. PowerEdge servers are presently limited to two-way clusters for failover, using Microsoft Cluster Server Services software.

Dell's demonstration this week is too limited to constitute a full-fledged cluster, according to International Data Corp. analyst Daniel Kusnetsky. But he says the effort "extends Dell's reach beyond where it was before." Still, he says Dell needs to bolster its consulting, training and support services before customers will really consider the company seriously for data-center database duty. ■

Three years in the making, the ANX is official

By Denise Pappalardo
Detroit

The Automotive Network Exchange (ANX), an IP-based virtual private network that will let auto manufacturers and suppliers securely conduct business, is finally up and running. Sort of.

The ambitious ANX VPN project — which will ultimately connect more than 10,000 automotive businesses — is about a year behind schedule. And while the network began supporting live traffic last week, the traffic it's supporting is only between two steel suppliers. But some 40 auto manufacturers and suppliers are testing the network, and all expect to go live on the ANX by Nov. 1.

The delay is primarily due to the fact that only last week the Automotive Industry Action Group (AIAG) approved its first certified service providers. Ameritech, Bell Canada and Electronic Data Systems (EDS) passed the AIAG's stringent service-level tests, and users can order services from those ISPs to connect to the ANX.

Stringent performance requirements from the AIAG also slowed the ANX's rollout. For example, certified providers at all times must support:

- A minimum latency of 125 msec from network edge to network edge.
- A minimum of 10 packets lost for every 10,000 sent (the original requirement was three packets lost for every 10,000).
- A network availability of 99.5%.

MCI, Concentric Network and AT&T all expect to get the AIAG's approval before year-end.

Other big-name ISPs, such as UUNET Technologies and GTE Internetworking, are strangely absent from the ANX — both companies have stated they are not seeking certification at this time.

Gaining AIAG certification could be important for ISPs and their customers because within six months the AIAG plans to make its ANX VPN available to other vertical industries, such as health care, insurance and finance, says Karl Schohl, ANX business manager.

The big three auto makers, Ford, General Motors and Chrysler, have been working with the AIAG since 1995 to put together an IP network that will let suppliers and manufacturers conduct business on a single secure network.

And users are ready to sign up. Wheel manufacturer Hayes Lemmerz International has multiple dial-up connections to Ford, General Motors and other suppliers to support trade transactions, says J. Robert Dacey, LAN/WAN administrator at the Romulus, Mich., company.

"There is a good business case to move to a single network, and the cost savings will be realized long term," Dacey says. "Now that we've migrated most of our mainframes onto Oracle servers and have addressed most of our Year 2000 issues, we're ready to get into the ANX."

In addition to signing up with a certified service provider and the AIAG, auto industry suppliers must also team up with one of eight approved IP Security (IPSec) vendors.

Through extensive testing, the International Computer Security Association has certified that Axent, Check Point Software Technologies, Cisco, IRE Secure Solutions, Network Associates, Radguard, TimeStep and VPNet have IPSec security gateways that interoperate. The testing certified that the gateways complied with the pending IETF IPSec standard. Changes will be made in the future if necessary.

An important piece of the IPSec standard includes the use of digital certificates for authentication. The AIAG is working with Digital Signature Trust as its certificate authority service provider, the ANX's Schohl says.

All ANX users will be required to use X.509 digital certificates to authenticate and identify users before establishing an encrypted session over the ANX VPN.

Because there are interoperability issues among certificate authorities, the AIAG is only working with Digital Signature Trust for now. But as interoperability issues are resolved, other service providers will be added, Schohl says. ■

The dollars and cents of the ANX

Have you thought about how much it might cost to connect to an industrywide VPN? Here's a look at what the average automotive industry supplier will pay to be part of the ANX.

Requirements	One-time cost	Annual cost
ANX network assessment	$2,400	–
IPSec software	$11,000	–
Training	$10,000	–
Digital certificates	–	$250
ANX subscription and registration fees	–	$6,400
Dedicated T-1 to the ANX	–	$48,000
	$23,400	**$54,650**

SOURCE: AIAG, DETROIT

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This week's question:
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Which company used the code name Surge for the newest version of its messaging software?

3Com

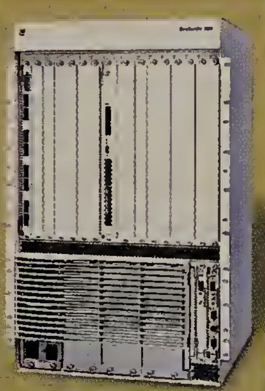
Continued from page 1

port revenue for the second quarter of 1998. Cisco is the leader in number of ports shipped, In-Stat reports.

According to the study published by Dell'Oro, FORE ranked first in ATM LAN switch revenue for the second quarter of 1998, with a 23.9% share. The In-Stat study also ranked FORE first, with a 30.1% share in the same period.

MANAGEMENT MANEUVERS

Other features of the CoreBuilder 9000 ATM switch.



- I/O modules with dual OC-12 connections to a passive backplane.
- Four power supplies and redundant management controllers.
- OC-48 interfaces (future).
- MPOA Server (second half 1999).
- DS-3/E-3 WAN interfaces (future).

In-Stat ranked Cisco first in worldwide ATM LAN switch port shipments for the second quarter of 1998, with 26.5% market share. 3Com, meanwhile, was well behind in ATM LAN revenue and shipment in the second quarter, with 7.6% and 6.3% shares, respectively, according to Dell'Oro.

"We need to gain further market share and we will," 3Com's Ramsay pledges.

Take that to the bank

3Com is banking on the CoreBuilder 9000 for that gain. Of its 16 slots, 14 are for payload and two are for redundant switching fabrics. Initially, the nonblocking switching fabric will be 15G bit/sec, but 3Com plans to scale that to 25G bit/sec and 50G bit/sec next year, and then to 70G bit/sec in 2000. 3Com's current ATM backbone offering is the 5G bit/sec CoreBuilder 7000.

By contrast, Cisco's LightStream 1010 and Catalyst 5500 switches can handle 5G bit/sec. The company's Catalyst 8500 MSR will scale to 20G bit/sec, but it isn't shipping yet.

FORE's ASX-4000 is a 40G bit/sec switch that started shipping last week. The company also offers the 10G bit/sec ASX-1000 and is developing a 20G bit/sec frame/cell switch for enterprise LAN applications under the code name Hydra, which will ship next year (*NW*, July 27, page 1).

3Com's CoreBuilder 9000 can sport up to 88 155M bit/sec OC-3 ports and up to 22 622M bit/sec OC-12s on quad-port and single-port daughtercards, respectively. The daughtercards, which support either multimode or single-mode fiber, fit into I/O modules for each slot that have a dual OC-12 connection to the CoreBuilder 9000's passive backplane.

Each I/O module holds two daughtercards. This allows users to mix and match different port interfaces on each slot, depending on what's required, 3Com says.

The switch also supports up to four power supplies and redundant management controllers.

3Com will roll out 2.5G bit/sec OC-48 interfaces for the CoreBuilder 9000 when it upgrades the switching fabric to 25G bit/sec. Future features also include DS-3/E-3 WAN interfaces and Multi-Protocol over ATM (MPOA) Server capabilities in the second half of 1999.

These features will enable the CoreBuilder 9000 to function as a central ATM route server for MPOA clients — 10/100/1000M bit/sec Ethernet/ATM wiring closet switches like 3Com's CoreBuilder 7000 — at the network edge.

3Com also plans to add OC-12 uplinks to its SuperStack wiring closet switches in the first quarter of 1999 so they can have a high-speed ATM riser connection to the CoreBuilder 9000 in the backbone. And 3Com will ship Layer 3 Gigabit Ethernet switching modules for the CoreBuilder 9000 before year-end, Ramsay says.

Users seem satisfied with the switch's current capabilities. Widener College in Chester, Pa., opted for the CoreBuilder 9000 over offerings from Cisco, Bay and Cabletron.

User satisfaction

"Great product," says Gary Habermann, director of network operations. "We moved into production about six weeks ago. Currently there are about 17 buildings running through one box with about 600 users and 40 servers. So it's running 60% of what I have on my backbone today."

The ATM switches let Habermann extend voice, data and video to classrooms, libraries, laboratories and administrative offices over a single network. Habermann says he has two more CoreBuilder 9000s on order.

Dominion Semiconductor in Manassas, Va., also picked the CoreBuilder 9000 over Cisco's ATM offerings.

"Right now we've got two of them," says Dan Jamison, networks architect at Dominion. "Cisco offered up its Catalyst 5500s, so it really wasn't much of a comparison. Cisco's Cougar 8500 wasn't that far along at that point." Cougar was Cisco's code name for the 8500 MSR.

In all, 3Com claims to have replaced Cisco's Catalyst 5500 in 12 of the 30 CoreBuilder 9000 ATM deals closed to date.

CoreBuilder 9000 costs $40,800 for chassis, 15G bit/sec switch fabric, power supply and software. OC-12 interface modules cost $9,950 and $13,950 for multimode and single-mode fiber, respectively.

OC-3 modules cost $9,950 for multimode and $20,950 for single-mode fiber.

✆ 3Com: (978) 264-1400

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Compaq

Continued from page 1

groupware functionality and Compaq's worldwide market clout will prove formidable. The Exchange/Work Expeditor package will compete directly with Lotus Notes and Domino as well as other Exchange add-ons from the likes of Eastman Software and Keyfile.

"I look at some of the stuff that Compaq can do with this, and not only should Microsoft be drooling — I would think that Lotus would be pretty nervous," says Tim Sloane, an analyst with Boston's Aberdeen Group.

Work Expeditor highlights

- Workflow, document management and collaboration for Microsoft Exchange and Outlook.
- Integration with Microsoft's BackOffice applications.
- Monitoring and user notification of activity in documents and objects.
- Centralized IT department control over workflows and data.
- Migration path for NT 5.0 and Active Directory.

Lotus executives regularly describe Exchange as "only" a messaging system that lacks the sophisticated groupware features of Domino and Notes. According to Sloane, Work Expeditor will blunt that criticism and add momentum to Exchange, which is already running neck and neck with Lotus' platform in sales surveys.

Compaq certainly sees that potential.

"Exchange plus Expeditor fills in some of the gaps that Exchange has been missing for some time," says Pat McCormick, a senior technology consultant at Compaq.

The Work Expeditor server runs on Windows NT and works with Microsoft's BackOffice software suite. It takes particular advantage of the SQL Server database to provide network managers with a centralized data repository and administration point, attributes not found in Exchange.

On the client side, Work Expeditor appears to the user as an extension of the Outlook folders tree. Users are able share information that is managed by the Expeditor server and can participate in workflows and receive notification of changes that occur in stored documents or objects.

Work Expeditor customers may also develop customized applications using Outlook Forms on the client side and Visual Basic on the back end.

While Work Expeditor uses the existing Exchange Directory, it also includes additional directory components that enable its groupware functions and granular security capabilities.

"Where the Exchange Directory does not have the attributes that we require, we supplement the directory and store those attributes within our own directory," McCormick says. "As Exchange starts to use Active Directory, then we also will use Active Directory."

That will happen with the next major upgrade of Exchange, code-named Platinum, which is scheduled to ship three to four months after NT 5.0. Microsoft has not set a delivery date for NT 5.0.

While extremely high on Work Expeditor's potential, Sloane does caution potential enterprise customers on two points.

"Expeditor will suffer the same fate as Notes in many accounts; it will be installed and paid for, but underutilized," he says. In addition, "For companies not committed to Exchange, or running two or more different messaging infrastructures, then Expeditor is probably inappropriate."

One Exchange customer familiar with Work Expeditor believes it should be a hit in organizations that depend heavily on collaboration among employees.

"It's going to be attractive to project-oriented companies," says Dave Byrkit, e-mail administrator at ITT Avionics in Clifton, N.J. "It looks like it's a powerful way to pool your resources."

End users should adapt easily to Work Expeditor, according to Byrkit, because "it's melded in nicely with the Outlook client."

While the initial release of Work Expeditor does not let users access the server from a Web browser, Compaq intends to add that capability in a future release, McCormick says.

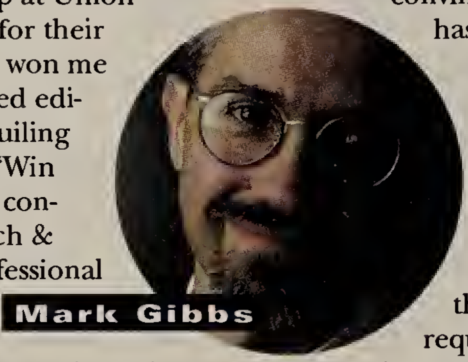
Compaq declined to provide pricing information. ■

Backspin

I like what I see at the new Novell

So as I was saying, spam is . . . just kidding. After three columns on the topic — and despite the huge feedback — my editor has threatened me with grievous bodily harm if I don't move on to a new topic this week.

First, a thank-you to Bob Patterson and the IT group at Union Switch & Signal for their hospitality. They won me (and my esteemed editor, the ever-beguiling Mr. Dix) in the "Win Gibbs for a day" contest. Union Switch & Signal has a professional setup and an eye on the future. Guys, if you enjoyed it half as much as we did, then we enjoyed it twice as much as you.


Mark Gibbs

If I had to give one bit of advice to the Union Switch & Signal IT group, it would be this: Consider NetWare. I just spent two days at Novell and came away with a new respect for NetWare.

Novell's biggest problem lies in communicating just how damn clever it is. Over the course of my visit, I heard about all of Novell's major offerings — and it was about a tenth of the time needed to really cover the products in detail.

While most of the products were impressive, the big story is NetWare 5. NetWare 5 has a huge list of improvements, including Novell Storage Services (NSS).

If you have mounted a large (multigigabyte) NetWare volume, you know it is a slowwww process and requires a lot of RAM. With NSS, mounting 100G bytes takes less than 30 seconds. Novell claims to need only 4M bytes of RAM for a 500G-byte volume with 20 million files — and that includes the RAM needed to load NSS! All in all, the product is an amazing improvement over previous releases.

Another way cool feature is the embedded Java Virtual Machine (JVM). The Novell JVM is reputed to be one of the fastest on the planet and offers third-party developers a completely new set of opportunities.

There is a lot more technology that is either an important change (pure IP support), a major upgrade (the new security architecture is mind-numbingly huge) or a hot new service (the embedded JVM), but it is Novell Directory Services (NDS) that is the convincing edge that NetWare has over Windows NT.

And when you see what NDS brings to Windows NT in the form of NDS for NT 2.0, it's hard to figure out why you'd want to run an NT network without it. All of those clumsy contortions required to configure user rights under NT's domain system are obviated with NDS for NT. And for $29 per NT server, I don't think it's a hard decision.

"Hold hard, Mark," you might be saying, "don't you need a NetWare server?" Well, you're correct. A NetWare server is currently required for the master copy of the NDS database, but Novell is threatening to remove that issue in a near future release. In the meantime, you can run a NetWare 4.0 run-time system.

"Yeah, but I don't want to learn NetWare," you say. "I've got enough to manage already." Well, from what I've seen, learning to drive NetWare and NDS for NT will pay for itself by reducing the management burden imposed by NT domains.

"What about Microsoft's Active Directory Services (ADS)?" you might also be asking. From what I've seen of ADS technology so far, Novell doesn't have a technical challenge on its hands, simply a marketing challenge.

At the event, I ran into an old friend who works for Novell. He told me that if I'd held on to my Novell stock options, they'd be worth more than $3 million today. Well, tomorrow I'm going to buy some Novell stock. What I saw last week makes me think Novell's future is a good bet.

Send investment advice to nwcolumn@gibbs.com or (800) 622-1108, Ext. 7504.

'NET BUZZ

The latest on the Internet/intranet industry

SWINGING FOR THE FENCES IS HEALTHY **Mark McGwire** hit a stinging single to left center field last week.

You probably didn't know that because you aren't interested in mere base hits. What you care about are the McGwire home runs, those stratospheric blasts that have put the **St. Louis Cardinals'** slugger in the record books and given fans something to remember.

The Internet world is much like baseball, without the chin music and seventh-inning stretch. Nobody gets excited about small successes. What we care about are the big winners, the ones by which others are measured, as in "This company could be the next (fill in blank)."

One such winner has been online bookseller **Amazon.com,** its recent drop in stock price notwithstanding. The Seattle company is a pioneer in using the Internet to sell a specific consumer product in a huge market with wide demographics.

This has led many start-ups to roughly replicate Amazon.com's strategy in other product areas. One of those is **GreenTree Nutrition,** which reportedly is close to wrapping up a second round of venture capital.

If Amazon.com is the Internet's bookstore (a claim **Barnes & Noble** is challenging), San Francisco's GreenTree aspires to be the Internet's health store.

Chris Nerney

On Sept. 18, GreenTree will launch a new Web site that designs personalized health plans. Users who input lifestyle background and diet habits will receive health, diet and fitness recommendations tailored to their personal needs.

GreenTree's current Web site (www.greentree.com) offers health and nutrition information to users, licensing content from the ***New England Journal of Medicine*****, Time-Life, MedLine** (the archived records of the National Institutes of Health) and **The New York Times Syndicate.**

The site also offers Web users a range of vitamins, minerals, herbs and other nutrition products, though it doesn't appear to carry androstenedione, the testosterone-producing protein supplement that some busybody sports writers believe has given McGwire an unfair advantage in his quest to break **Roger Maris'** single-season home run record.

Founded in September 1997, GreenTree received its first round of venture funding this spring from **21st Century Internet and Health Business Partners,** an investor in natural health companies based in East Greenwich, R.I.

BACK-TO-SCHOOL SHOCKER In the eighth grade I had a slight run of bad luck in school, brought about by a combination of inattention and inattendance. Consequently, my fourth-quarter report card featured a bright red D in geometry.

By the time I arrived home, however, the scarlet D had been magically transformed by my hand into a B. An unnaturally fat B, granted, but a good enough forgery to fool my parents. It was far and away my most successful school project of the year.

Now, thanks to **ThinkWave Software,** easily distracted and under-achieving students will have to find other ways to hide the bitter truth from mom and dad.

Using ThinkWave's new Educator Express software, teachers can send grade reports home via e-mail. The free software, which runs on Windows 95 and 98, also allows educators to keep student records, administrative data, assignments and classroom results. Yes, all that also can be e-mailed to parents. Is nothing sacred?

An upgraded version of the software, Educator Pro, adds functions for calendars, lesson plans and a goal-seeking utility that lets teachers project a student's performance. Educator Pro costs $60 and can be downloaded at www.thinkwave.com.

Based in Pacifica, Calif., ThinkWave was formed in 1997. The company's founders reportedly sat at the front of the class.

Don't worry if you think your Internet- and intranet-related news items are not up to par; 'Net Buzz grades using a curve. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.

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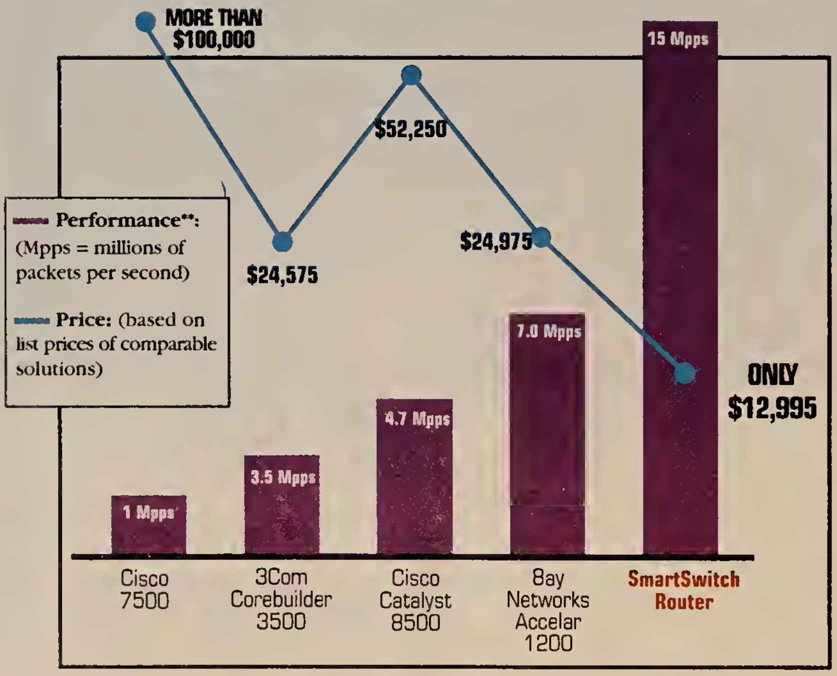

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